METAL PRODUCTS MANUFACTURING

MPM

Serving the Appliance and Fabricated Metal Products Industry

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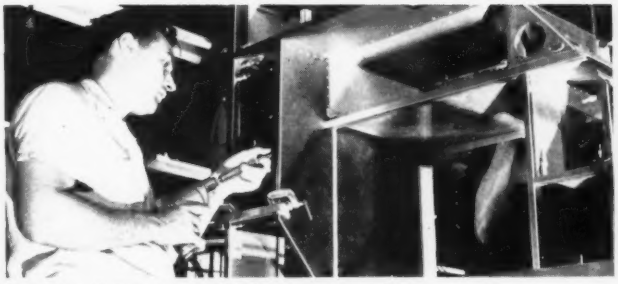
Whirlpool's Modernized Service Center — Page 36



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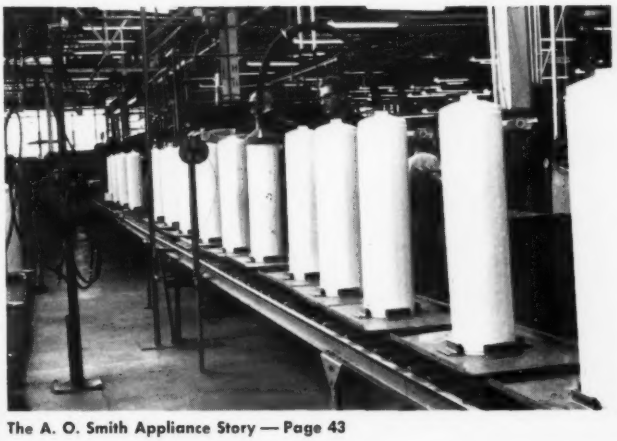


The A. O. Smith Appliance Story — Page 43

TLC* dryer control thinks for itself

. . . all she does is set the dryness she wants!

Robertshaw TLC* dryer control does for the laundry what automatic cooking has done for the kitchen!

Robertshaw's TLC* dryer control automatically determines evaporation taking place by measuring temperature drop of air passing through wet clothes . . . calculates with extreme accuracy the amount of drying required for any size load, any fabric, any mix. Temperature is gradually reduced as clothes approach desired dryness. When set dryness is reached, heat is turned off for gentle fan-cooling.

Results: *tender, loving care* for even the daintiest things, because:

- TLC eliminates drying time guessing . . . *there is no timer*
- TLC dries everything from single handkerchief to full load
- TLC drying temperatures safe for all fabrics . . . any mix
- TLC prevents over-drying . . . and reduces tumbling wear
- TLC delivers cool, dry clothes . . . wrinkling reduced
- TLC is as simple to operate as your range oven control

In short . . . TLC dries clothes safely . . . in the least amount of time . . . economically . . . automatically . . . *and without a timer* . . . not even a hidden one! Specify Robertshaw TLC control on your 1962 dryers.

VMA7799

Robertshaw

. . . the name that MEANS temperature control

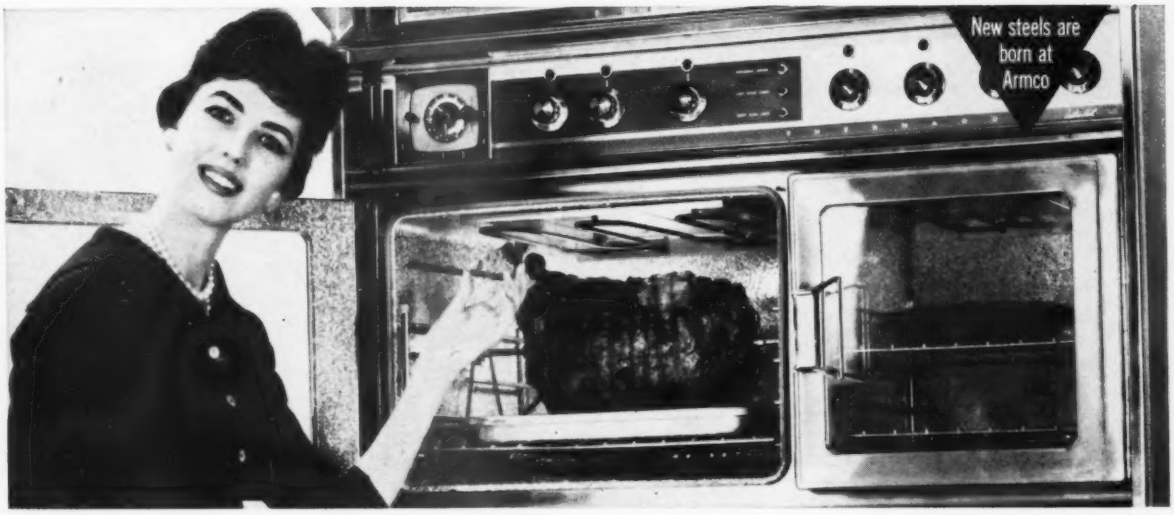
ROBERTSHAW THERMOSTAT DIVISION
Robertshaw-Fulton Controls Company
Youngwood, Pennsylvania

Canadian Affiliate
Robertshaw-Fulton Controls Company, Limited, Toronto

*Trade Mark — Robertshaw TIMER-*less* control system for *any* dryer (available on 1962 dryers)

She Wants Efficiency....

Provide It Economically with Armco ALUMINIZED STEEL



Housewives look for cost-saving and time-saving efficiency in the appliances they buy. You can provide this sales advantage *economically* by using Armco ALUMINIZED STEEL for heat reflectivity in your appliances. This special aluminum-coated steel bounces back up to 80 per cent of radiant heat, yet costs less than other materials to do the same job.

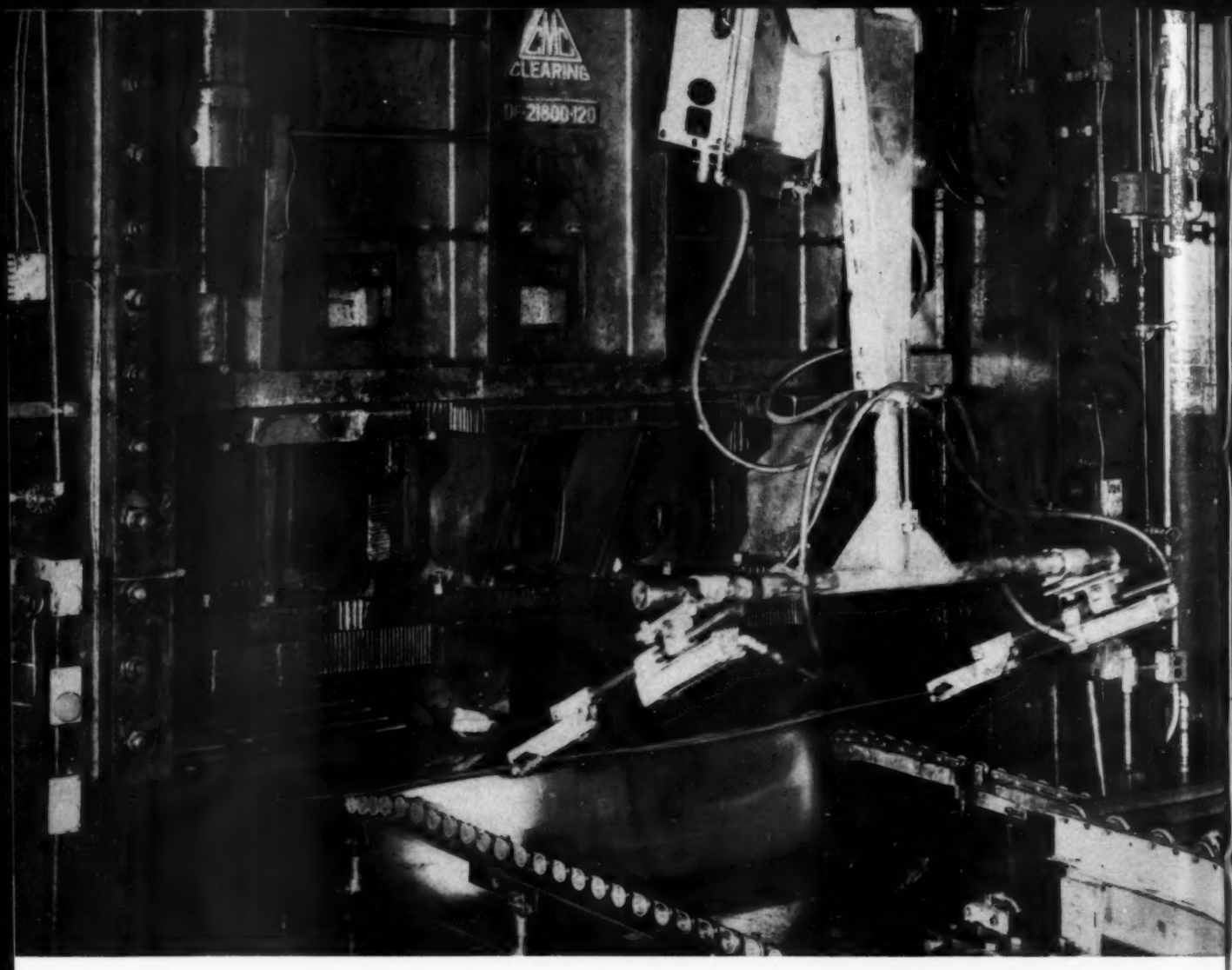
ALUMINIZED STEEL is extra strong—too. It usually does double duty, serving as a structural part as well as a reflector. For more information on how this economical two-in-one metal can put more sell into your appliances, just write Armco Steel Corporation, 1121 Curtis Street, Middletown, Ohio.

Steel

Capitalize on high customer acceptance of steel; put the distinctive Steelmark on the products you make.

ARMCO

Armco Division



KERNS UNITED SOLVES MAJOR PROBLEM IN DRAWING BATHTUBS AT KAISER METAL . . . WITH SAVINGS BEYOND EXPECTATIONS!

Determined to make bathtubs from cold rolled stock, Kaiser decided to turn the project over to Kerns United. Even though others experimented for over 7 months with little success, **Kerns United, in a few short weeks proved to Kaiser's management that bathtubs could be drawn from cold rolled stock using Kerns "DRY-FILM" Drawing Compound.**

The resultant savings to Kaiser were beyond all predictions. Compound costs were greatly reduced . . . Use of "DRY-FILM" reduced bathtub scrap from 7% to less than 1% . . . Reduction in size of deep tub blank resulted in considerable savings per blank. Kerns "DRY-FILM" also permitted blanks to be automatically fed into the press, thus relieving 5 men from tub line for more important duties.

This is but one example of what can be accomplished by utilizing Kerns capabilities, experience and products tailored to meet your production requirements.

See the results of a specialized lubricant *in your plant* at no cost by taking advantage of Kerns Memo Billing Trial Basis.

Write now for Portfolio on "Proper Handling and Application of DRY-FILM Drawing Compound."

World's largest Exclusive Manufacturer of Specialized Industrial Lubricants.

KERNS UNITED Corporation

2657 East 95th Street • Chicago 17, Illinois

Subsidiary: KERNS PACIFIC Corporation, *630 N. Batavia St., Orange, California*

Offices in Principal Cities throughout the U.S.A.

MPM

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, sales management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

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G.E.I. EXTRUDED ALUMINUM SHAPES

ADD BEAUTY . . . UTILITY TO FAMOUS PRODUCTS MANUFACTURED BY

Youngstown Kitchens

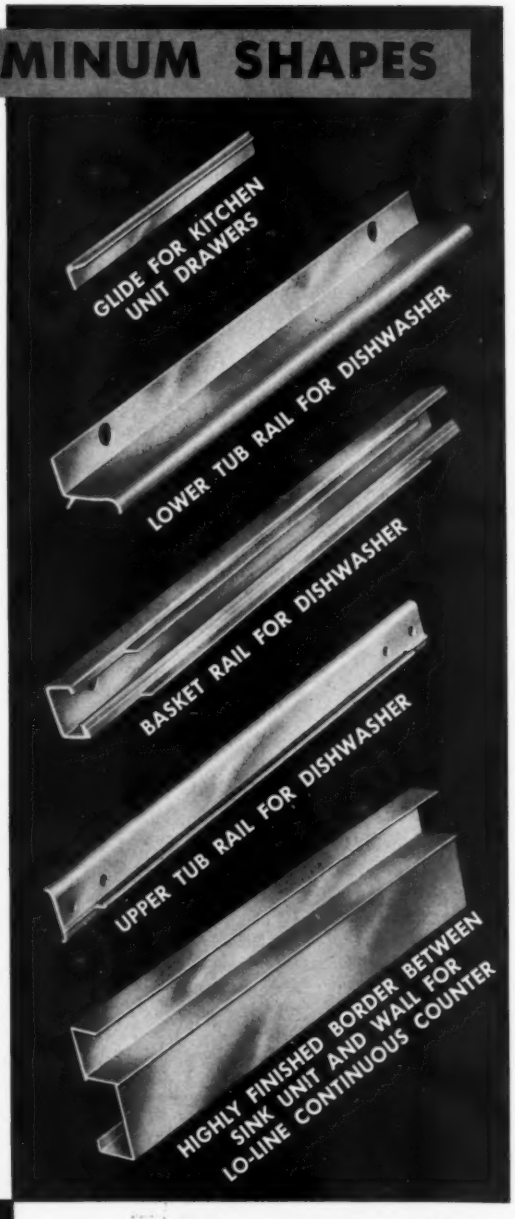
Five functional and decorative extruded aluminum parts used in the manufacture of Youngstown Kitchens' Jet-Tower Dishwashers and LO-Line Continuous Counter Tops are produced by General Extrusions, Inc. Needless to say, the most rigid quality requirements are in force.

G.E.I. is geared to accomplish special things in design, close tolerances and quality, rapid production and delivery—most of the time at REGULAR SOLID SHAPE PRICE. G.E.I. engineers are constantly searching for new standards and improvements, new ways to save the customer time, material and money.

GENERAL EXTRUSIONS, INC.
Box J, 4040 Lake Park Rd., Youngstown 7, Ohio

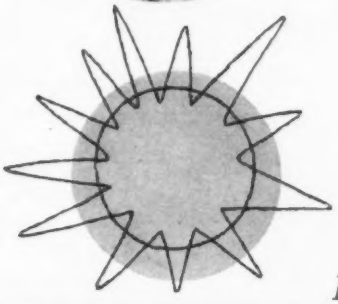
SALES OFFICES AT ST. LOUIS, CINCINNATI, PITTSBURGH CHATTANOOGA, AND CLEVELAND

Consult your classified phone book under Aluminum Products.


GLIDE FOR KITCHEN UNIT DRAWERS
LOWER TUB RAIL FOR DISHWASHER
BASKET RAIL FOR DISHWASHER
UPPER TUB RAIL FOR DISHWASHER
HIGHLY FINISHED BORDER BETWEEN SINK UNIT AND WALL FOR LO-LINE CONTINUOUS COUNTER

Youngstown Kitchens' Jet-Tower Dishwasher is expertly engineered and manufactured with three G.E.I. shapes. The upper tub rails, lower tub rails and basket rails are from G.E.I. Before these shapes could be produced, all consideration had to be given to the fact that these extrusions would be subjected to extreme temperatures, detergents and wear and tear of rollers. G.E.I. came up with highly anodized, completely fabricated and durable shapes to help make Youngstown Kitchens' Jet-Tower Dishwasher a top quality product.

Youngstown Kitchens' new Woodcharm line employs a G.E.I. extrusion as the border between continuous counter and wall. Elegantly anodized, the G.E.I. shape blends in with decorative schemes and acts as buffer between sink unit and wall—resisting food splashes, detergents, etc. Drawers smoothly glide on an aluminum extrusion from G.E.I. Tappan range at far right also uses G.E.I. shapes for beauty and utility purposes.



Sign of the Times...

Lead Specified for Color and Weather Resistance

Porcelain enameled expanded metal by Ingram-Richardson Manufacturing Co.

Nothing subliminal about this new giant sequoia of the sign world—nearly 5000 square feet of display project its dramatic message. Engineered for beauty and durability, the sign's basic background material is expanded aluminum covered with porcelain enamel.

In the delicate process of porcelain enameling the expanded metal, lead proves to be the most satisfactory fluxing agent. Lead lowers an enamel's melting point, permitting it to be fused onto aluminum at temperatures low enough so that the metal remains stable. The enamel flows on smoothly and forms a thin acid-resistant, adherent surface or coating which allows cutting, shearing and punching after fabrication with little or no spalling or chipping.

Why not investigate the cost saving advantages of lead compounds for your products. Write for "Lead in the Ceramic Industries." Lead Industries Association, 292 Madison Avenue, New York 17, N. Y. 2882

LOOK AHEAD WITH LEAD

APEC . . .

building . . .

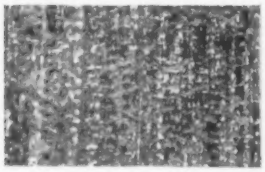
growing . . .

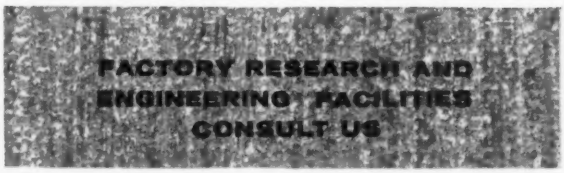
the source

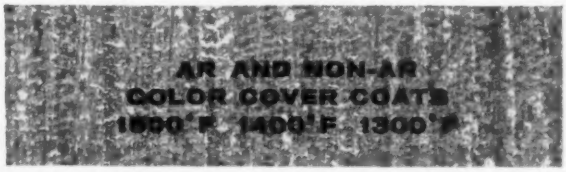
for

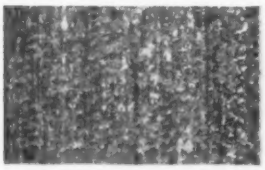
porcelain

enamelers









05

APEC

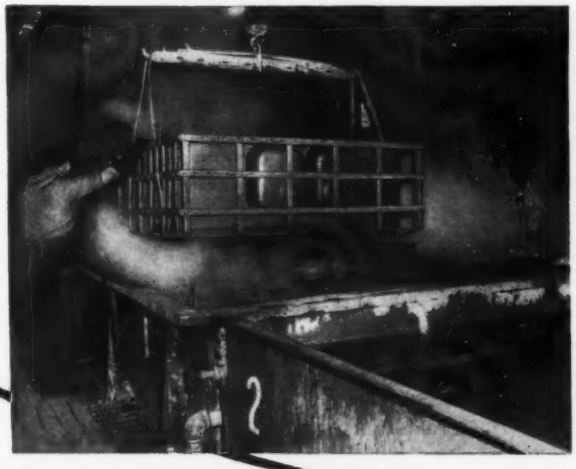
american porcelain enamel company

POPLAR 6-4756 • 1285 KEATING AVE. • MUSKEGON, MICHIGAN

MAC CHEM **1-2 CLEANING PROCESS for ENAMELING**

for High Quality PORCELAIN ENAMELING

IT'S A HIGH SPEED CLEANING PROCESS THAT CLEANS SO IT STAYS CLEAN



In enameling, there's nothing so costly and disheartening as rejects. If you are faced with this difficulty—due to unclean metal parts—Mac Chem 1-2 Enameling-Cleaning Process can be of an infinite help.

While we do not claim that Macco Cleaner and Cleaning Process will entirely eliminate all rejects, we do maintain they will reduce them to minimum.

1 Mac Clean No. 20 is a Heavy Duty Cleaner specifically designed to remove all special enameling drawing compounds, etc. It is a fast, easy-to-use, economical cleaner — non-toxic, non-corrosive, and non-injurious to metals.

2 Mac Chem No. 30 is a Second Step, Light Duty Cleaner which removes all residue from the cleaner baths, leaving the metal so chemically clean that it stays clean and readily accepts acid pickle and nickel.

FOR QUICK RESULTS

Write or phone Macco today and have a Macco engineer make a demonstration in your plant. No obligation, of course.

This 2-Stage Metal Cleaning System is serving some of the country's largest porcelain enameling plants. Can be used with equal effectiveness in both automatic and batch type equipment.

MACCO PRODUCTS COMPANY

Manufacturers of Better Metal-Working Compounds since 1931

9235 SOUTH SANGAMON STREET • CHICAGO 20, ILLINOIS • PRESCOTT 9-0800

Another new development using

B.F.Goodrich Chemical *raw materials*

Watthour and demand meters made by Duncan Electric Co., Inc., Lafayette, Indiana, use a casing of Geon vinyl for current-electromagnet assembly injection-molded in place. B.F.Goodrich Chemical Company supplies the Geon vinyl.

Meter maker unitizes, insulates, and protects magnets with Geon

Geon vinyl does a three-way job for this meter manufacturer. By securing parts in position, providing insulation and protecting them against injury, Geon helps produce a better, longer lasting current-electromagnet assembly.

The manufacturer says that Geon exhibits excellent heat stabilization —it holds up well under high temperatures without exuding fumes that might corrode brass parts used in other areas of the meter. In addition, use of Geon made possible a less critical molding process, resulting in a more uniform finished piece.

Immediately after the molding process, high voltage tests of 7500 volts are made from turn to turn and from turn to ground—proof again of the outstanding electrical properties of Geon vinyl.

Here's another example of the way that products can be improved with Geon. Why many manufacturers are using it to open whole new markets. To get more information, write Dept. NB-1, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

Geon VINYLS

B.F.Goodrich Chemical Company
a division of The B.F.Goodrich Company

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GEON vinyls • HYCAR rubber and latex • GOOD-RITE chemicals and plasticizers

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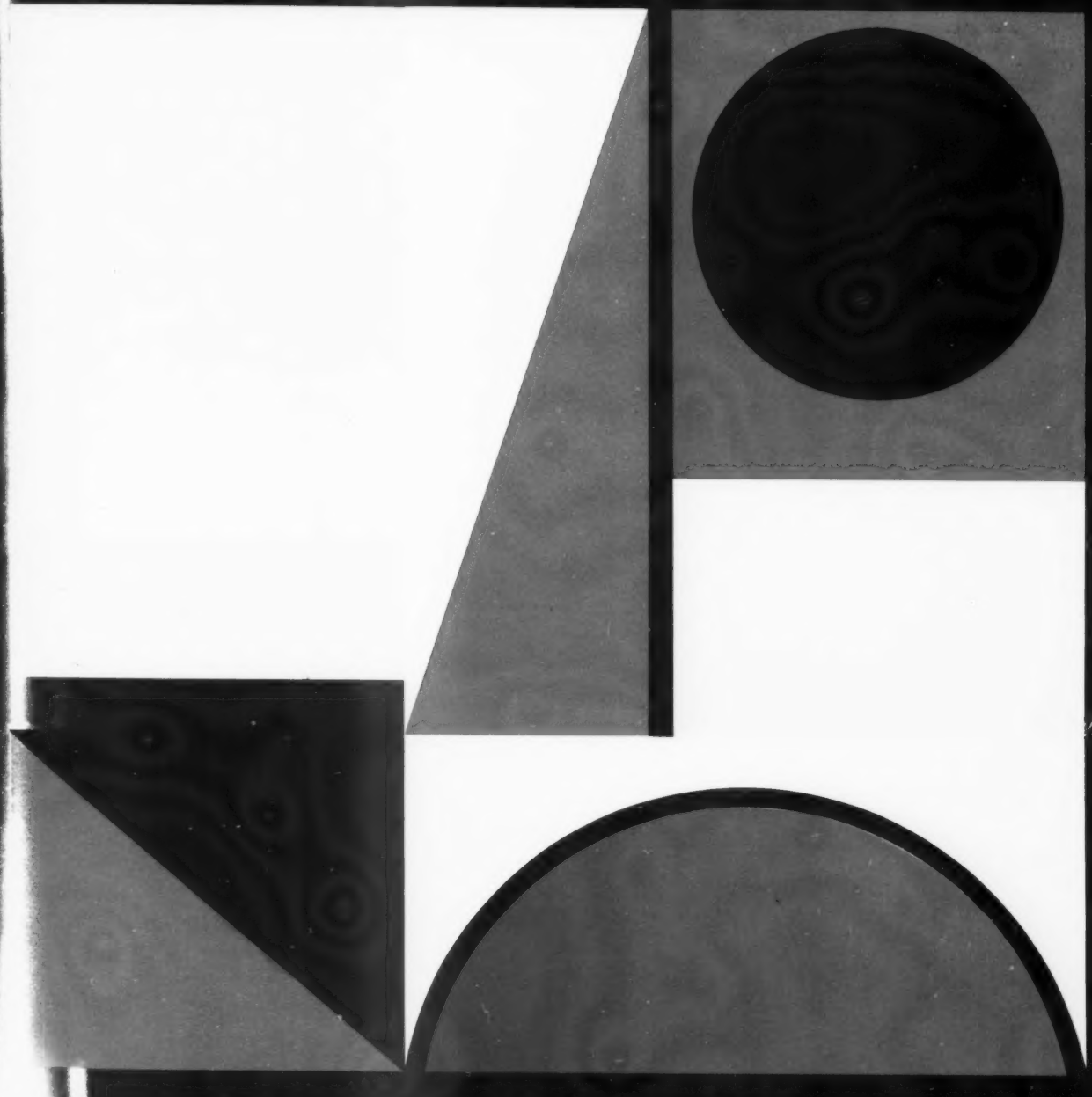

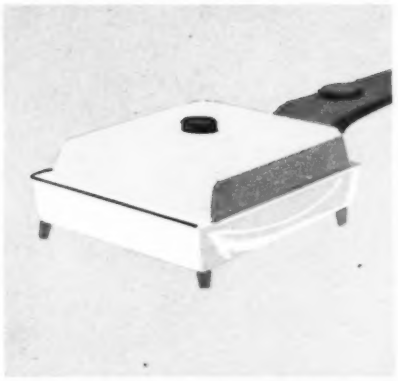

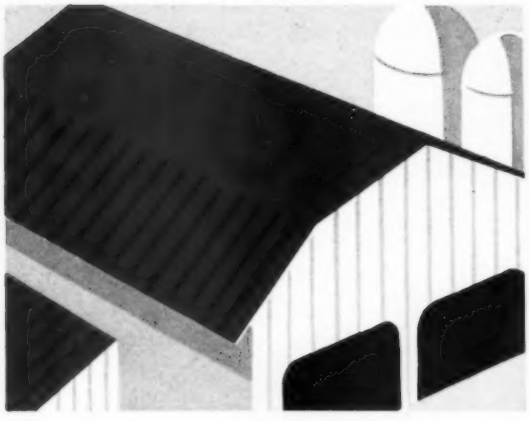

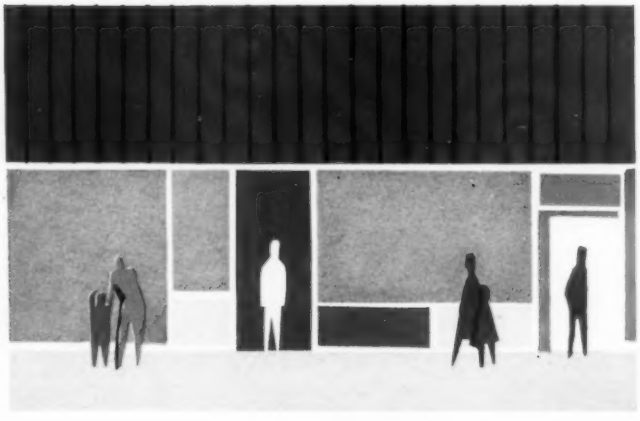

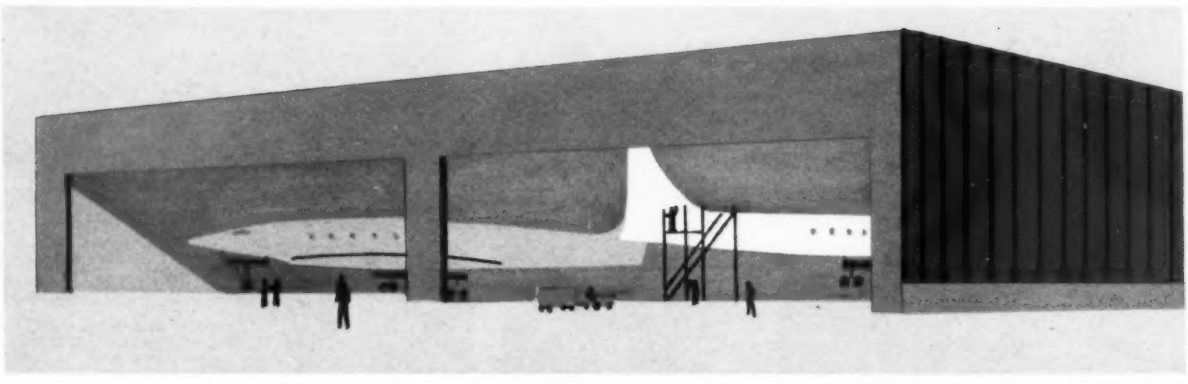

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Color sells! How often you've heard that. And it's truer than ever in this era of highly competitive marketing.

When you combine the advantages of ALUMINUM with the brilliant, non-fading, lasting color of PORCELAIN ENAMEL, you take a long step toward getting the "buyer's vote." Your product is distinctive, obviously "quality"—which interests wholesalers and dealers, and *their* customers, too!

Also, the cost will surprise you . . . pleasantly! This applies to the equipment needed, as well as your production costs. Ferro, as world leader in porcelain enamel, has done much to make the process completely practical and economical. Our staff of engineers, builders, process and color specialists, will be happy to work with you.

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MPM

editor's mail

Promoting the GAES

Gentlemen: I appreciate receiving the clipping from your magazine which shows the coverage made of our most recent meeting of the Midwest Gas Appliance Engineers Society. I am strongly of the opinion that coverage such as this will aid in the development of the Midwest chapter. We wish to extend our thanks for your efforts in promoting the society to your readers.

Jerry T. Alger
Configured Tube Products Co.
Subsidiary of White-Rodgers Co.
St. Louis, Mo.

Magazine of great help

Gentlemen: Please keep forwarding your free copy of MPM, METAL PRODUCTS MANUFACTURING, magazine to the following: W. McKinley Baird, executive vice president, Blast Freeze Corp., 900 W. Campbell St., Arlington Heights, Ill.

Your publication has been of great help to us in securing new sources and products for the manufacture of our equipment.

W. McKinley Baird, Executive Vice President
Blast Freeze Corp.
Arlington Heights, Ill.

New sources of procured items

Gentlemen: We are enclosing a stamped envelope partly addressed to the Stone Container Corp., Chicago, Ill., which we would like you to complete the address and mail to them.

We are writing to them for further information on the article appearing on page 78 of the December issue of MPM. It does not give a complete address but we are very much interested in their product.

We find your publication very helpful in locating new sources of procured items in the manufacturing of stoves here. We will appreciate your further service in this instance.

W. E. Bryant, Purchasing Agent
Southern Steel and Stove Co.
Richmond, Va.

The article Mr. Bryant refers to is "Uses of Chemically Treated Containers for Protection," which appeared in the National Safe Transit Section. The address of Stone Container Corp. is 4200 W. 42nd Place, Chicago 32.

The Editors

A FIST FULL OF RELIABLE POWER...

... MERKLE-KORFF FHP GEARED MOTORS

Engineers want unfailing reliability, higher starting torques, more power, more versatility, more ruggedness . . . *in smaller packages.*

Merkle-Korff Geared Motors are the answer. They pack more torque into fist-sized spaces (even reversibles) with less weight and provide unequalled dependability. They represent not only a better buy, but better performance for equipment they power.

Versatility? Thousands of combinations of motor types, speeds, torques, brakes, fans and mounting facilities are available as *standard equipment.* When you specify Merkle-Korff Geared Motors, you are specifying the best.

Merkle-Korff Applications Engineers are always ready to serve you. Write or telephone, now.

TORQUE & RPM

Torques from .4 to 300 lb.-in. at 800 to 1/5 RPM. Slower or higher speeds available on special order.

MOTOR TYPES

. . . include unidirectional shaded pole induction, tandem induction reversing, wound shading coil induction reversing, unidirectional synchronous and wound armature types for universal AC-DC and shunt wound DC with lead arrangement for reversing as required. 115 volts, 60 cycles or DC is standard. Special voltages and frequencies are available.

MOUNTING POSITIONS

Horizontal or vertical up or down shafts in base mounted, no base (face mounted), inverted base or sidewall mounted designs.

OPTIONAL FEATURES

The Model BF Geared Motor may be ordered with leads, cord set, quick disconnect terminals, brakes, motor covers, thermal overload protectors, right angle shafts and various oiling arrangements.

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MERKLE-KORFF GEAR CO.

212 North Morgan Street • Chicago 7, Illinois

Telephone: MOnroe 6-1900

FOR DIRECT-ON PORCELAIN ENAMELING CHOOSE

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☐ Now, produce excellent, one-coat porcelain enamel finishes on metal surfaces. Your present equipment, only slightly modified, can bring you the advantages of an effective new direct-on development. ☐ Consider these features of the CITROBOND Process: **1.** Simply use citric acid in place of sulfuric acid in the pickling bath **2.** Dry, non-toxic, water-soluble, easy-to-handle Pfizer Citric Acid prepares the metal in a way that makes a ground coat unnecessary **3.** No major installation of special equipment is required **4.** Non-premium type steels can be used **5.** Excellent results are obtained with new low carbon steels ☐ Let Pfizer send you all the information about this modern enameling technique. Clip and mail the convenient coupon now.

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CHEMICAL DIVISION
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PLEASE SEND TECHNICAL INFORMATION ON CITROBOND.

Science for the world's well-being

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CHEMICAL DIVISION

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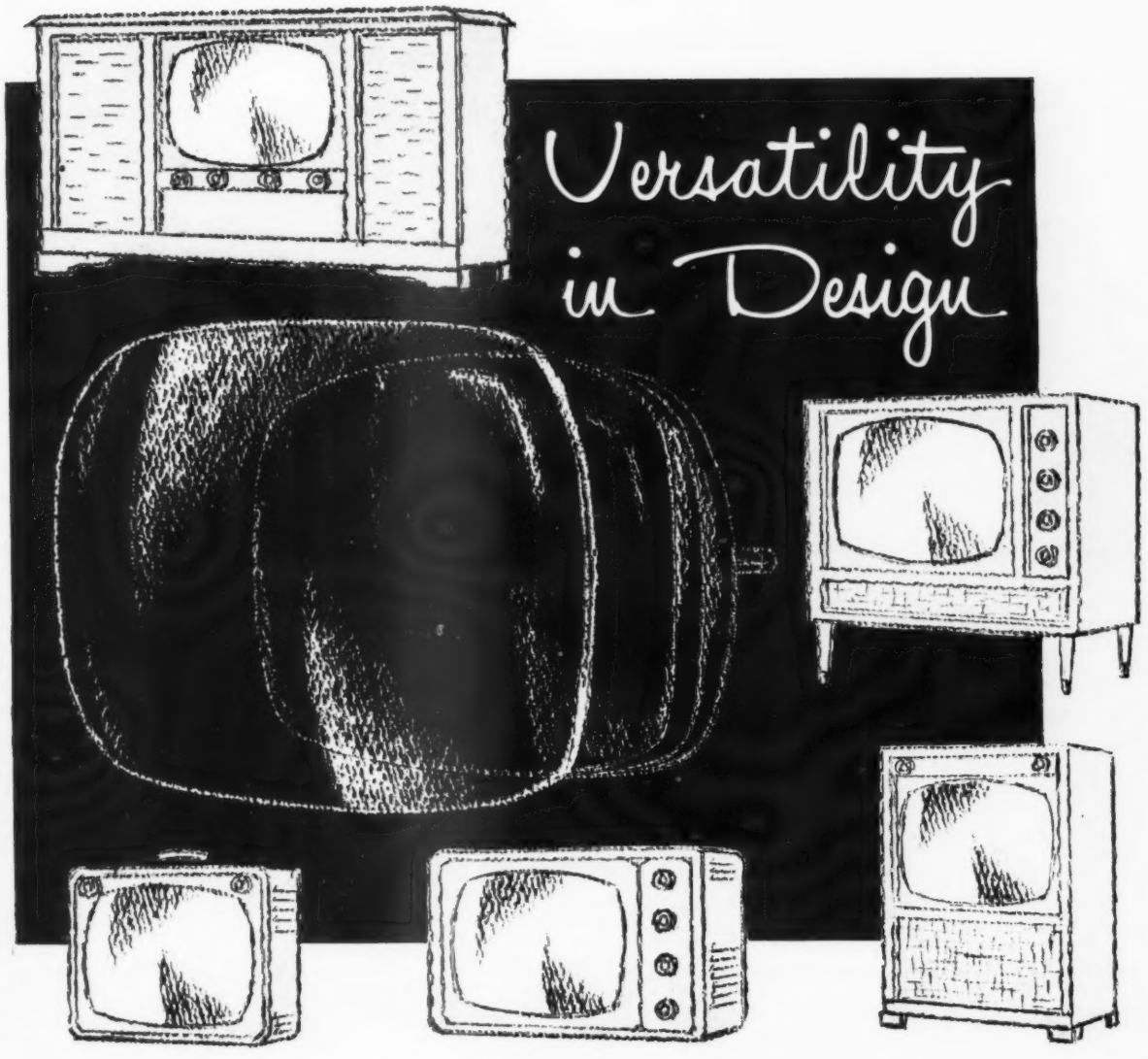
Company_____

Address_____

City_____ State_____



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Use glass designed to and for the complete TV cabinet — not just the tube. **MARSCO** can supply curved TV glass engineered to your specifications.

Design into your product—glass by **MARSCO**—Complete flexibility of design.

Applications for Marsco heat-treated, tempered and hardened glass parts:

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• PHOTOGRAPHIC EQUIPMENT • LIGHT LENSES • BACKGUARD GLASS FOR RANGES • SHELVING

Special Shapes for: Instruments, Gauges, Household and Industrial Appliances.

Marsco

MARSCO MFG. CO., 2901 S. HALSTED ST., CHICAGO 8, ILL.

YOUR COMPLETE SOURCE FOR '61

From freezing foods to cooling homes...

Copeland

COMPRESSORS

COPELAWELD
COPELAMETIC
BELT-DRIVEN

WELDED HERMETICS

Model 4U

Model 2U

Model CF 18S SPACE SAVER

DESCRIPTION	**COPELAWELD** WELDED HERMETIC MOTOR-COMPRESSORS 4 CYLS. 1750 R.P.M.	**COPELAWELD** WELDED HERMETIC MOTOR-COMPRESSORS 2 CYLS. 1750 R.P.M.	**COPELAWELD** WELDED HERMETIC MOTOR-COMPRESSORS • WING BASE MODELS • FLAT BASE MODELS
HORSEPOWER RANGE	**2½ H.P. THROUGH 5 H.P.** SINGLE AND THREE PHASE	**½ H.P. THROUGH 2 H.P.** SINGLE PHASE MODELS	**1/12 H.P. THROUGH ⅓ H.P** 115/1/60
APPLICATION	UNITARY AIR CONDITIONERS AND HEAT PUMPS	ROOM AIR CONDITIONERS • UNITARY AIR CONDITIONERS	REFRIGERATORS FREEZERS WATER COOLERS VENDING MACHINES BEVERAGE COOLERS AND MANY OTHER APPLICATIONS

Copeland

CONDENSING UNITS

FOR ALL HIGH, MEDIUM AND LOW TEMPERATURE APPLICATIONS

SPACE SAVERS

Model EKD-33I

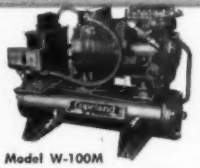
COPELAWELD
HIGH, MEDIUM AND LOW TEMPERATURE UNITS
⅛ H.P. THROUGH ½ H.P.

REMOTE AIR-COOLED

These NEW MODELS will be introduced at the 15th INTERNATIONAL HEATING and AIR CONDITIONING EXPOSITION CHICAGO • FEB. 13-16

½ H.P. THROUGH 7½ H.P.

REMOTE WATER-COOLED


Model W-100M

COPELAMETIC
½ H.P. THROUGH 10 H.P.

REMOTE CONDENSER UNITS

Model N-300L

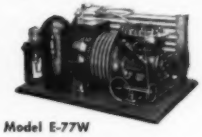
COPELAMETIC
½ H.P. THROUGH 10 H.P.

SELF-CONTAINED AIR-COOLED

Model E-75

COPELAMETIC
¼ H.P. THROUGH 1 H.P.

SELF-CONTAINED WATER-COOLED


Model E-77W

COPELAMETIC
½ H.P. THROUGH ¾ H.P.

HERE'S MORE OF WHAT IT TAKES!

MOST COMPLETE PRODUCT LINE

Copeland refrigeration and air conditioning equipment, ranging in size from 1/12 H.P. through 30 H.P., includes hundreds of variations to meet specific and rigid specifications. Your best move is to Copeland.

INTERNATIONAL DISTRIBUTION

Wherever you are located . . . in the United States and throughout the free world . . . you can count on Copeland and its 150 full-line wholesalers to meet your requirements quickly.

Copeland® has what it takes!

ACCESSIBLE HERMETICS

AIR-COOLED

Model LAL-300

COPELAMETIC
ACCESSIBLE HERMETIC
MOTOR-COMPRESSORS

¼ H.P. THROUGH 3 H.P.
SINGLE AND THREE PHASE

WATER-COOLED

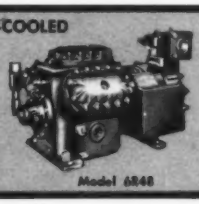
Model MAF-500

COPELAMETIC
ACCESSIBLE HERMETIC
MOTOR-COMPRESSORS

¼ H.P. THROUGH 7½ H.P.
SINGLE AND THREE PHASE

SUCTION-COOLED

Model 988



Model 6848

COPELAMETIC
ACCESSIBLE HERMETIC
MOTOR-COMPRESSORS

2 H.P. THROUGH 10 H.P.
SINGLE AND THREE PHASE

COPELAMETIC
ACCESSIBLE HERMETIC
MOTOR-COMPRESSORS

7½ H.P. THROUGH 30 H.P.

COMMERCIAL REFRIGERATOR DISPLAY CASES
REACH-IN REFRIGERATORS
LOW-TEMPERATURE DISPLAY CASES
DAIRY PRODUCTS DISPLAY CASES
BULK MILK REFRIGERATION SYSTEMS
TRANSPORT REFRIGERATION
FROZEN FOODS PROCESSING
ICE-MAKING EQUIPMENT

COMMERCIAL REFRIGERATION UNITS, HIGH, MEDIUM AND LOW TEMPERATURE APPLICATIONS
UNITARY AIR CONDITIONERS AND HEAT PUMPS
ENVIRONMENTAL TEST EQUIPMENT
CENTRAL STATION WATER CHILLERS
GUIDED MISSILE TRACKING AND TELEMETERING EQUIPMENT COOLING

BELT-DRIVEN

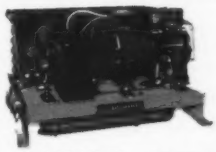
Model 18

COPELAND
COMPRESSORS
- AIR-COOLED
- WATER-COOLED

1/6 H.P. THROUGH 7½ H.P.

FOR REFRIGERATION
AND
AIR CONDITIONING
APPLICATIONS
WHERE VARYING
CURRENT CHARACTERISTICS
REQUIRE FLEXIBILITY

COMBINATION AIR AND WATER-COOLED

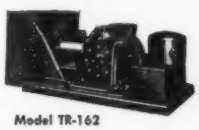


Model Z-200WA

For use where an air-cooled unit is desired, but high ambient temperature is encountered occasionally — or where water is limited or high priced.

COPELAMETIC
½ H.P. THROUGH 3 H.P.

TRUCK UNITS

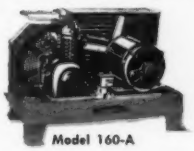


Model TR-162

Usually a permanent part of a holdover truck refrigeration system, units are plugged in at the garage and refrigeration stored for the run.

COPELAMETIC
½ H.P. THROUGH 3 H.P.
(3 H.P. M. & L. TEMP.)

BELT-DRIVEN



Model 160-A

REMOTE, AIR-COOLED
¼ H.P. THROUGH 3 H.P.

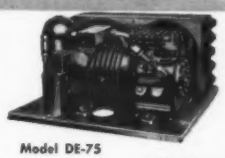
SELF-CONTAINED
AIR-COOLED
1/6 H.P. THROUGH ½ H.P.

REMOTE, WATER-COOLED
½ H.P. THROUGH 7½ H.P.

COMBINATION
AIR-WATER COOLED
½ H.P. THROUGH 3 H.P.

TRUCK MODELS
½ H.P. THROUGH 3 H.P.

SELF-CONTAINED, EXTRA-LOW HEIGHT



Model DE-75

These units are designed for special applications where height must be an absolute dimensional minimum.

COPELAMETIC
½ H.P. THROUGH 2 H.P.

Write for technical bulletins on Copeland products that fit your needs.

SALES FOLLOW-THROUGH

From an application for guided missiles to a single-room air conditioner, Copeland and Copeland wholesalers offer the technical assistance that keeps customers satisfied. Let us review your application requirements.

SINCE 1918 Copeland REFRIGERATION CORPORATION, Sidney, Ohio

FIRST

Acropon

Acropon is *the* outstanding thermosetting acrylic. It has been proven on the production line . . . and in the field. Acropon's performance characteristics are definitely superior: corrosion resistance, detergent resistance, hardness, abrasion resistance, flexibility, chip resistance, color retention, color control, economy. Acropon is economical tc apply . . . it retains an unusually beautiful finish for many years. Acropon is available from any one of DeSoto's Divisions* across the country. DeSoto Field Engineers are at your service. Your inquiry will receive our immediate attention.

DeSoto Chemical Coatings, Inc.

Quality metal products deserve

"the finishing touch" of Mahon

another example . . . 'maximum protection' cargo drums from top U. S. supplier

Mahon's metal cleaning and rust-inhibiting line installed at the Port Arthur, Texas, plant of a major supplier assures a "100% scale-free" product. Complete finishing is after fabrication to provide the best in cargo drums.

Mahon's Industrial Equipment Division knows production finishing best. If you make cosmetic cases or appliances, bicycles or railroad cars, or any other metal product . . . and if quality comes first . . . call in Mahon. Improved finishing can be the easiest and most economical product improvement you'll ever make. New paints, new methods broaden the possibilities. Find out what the 'finishing touch' of Mahon can do with your products . . . your costs . . . your sales. Get in 'touch' with Mahon.

MAHON INDUSTRIAL EQUIPMENT

• Finishing Systems • Metal Cleaning Equipment • Painting Facilities—spray, dip and flo-coaters • Drying and Processing Ovens • Special Plant and Production Equipment

WRITE FOR MAHON CATALOG A-661
ALSO IN SWEET'S P. E. FILE

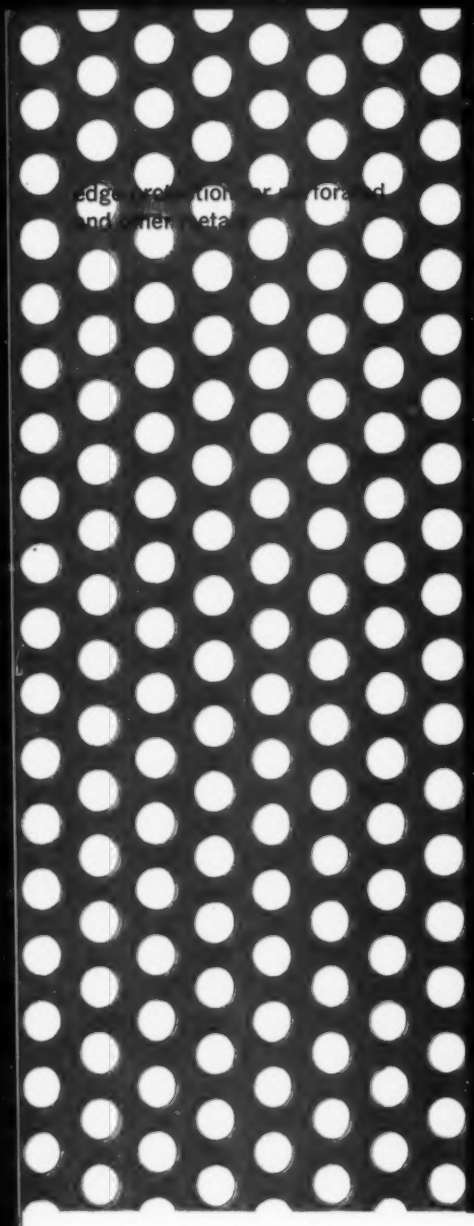
THE R. C. MAHON COMPANY

DETROIT 34, MICHIGAN

MANUFACTURING PLANTS—
Detroit, Michigan and Torrance, California
SALES-ENGINEERING OFFICES—Detroit, New York, Chicago, San Francisco and Torrance.

YOUR BIGGEST VALUE IS IN MAHON'S PLANNING & ENGINEERING EXPERIENCE

MAHON



thick film without
fill-in of pattern

color plus resistance
to chemicals and wear

New finish combination . . . pattern plus M&T Spray-on Vinyl protection

NOW YOU CAN SPRAY A VINYL COATING onto metal and produce a leather-like texture, or reproduce an existing metallic pattern in finest detail . . . thanks to new organosols developed by M&T. Equally important, your product gets all the heavy-duty protection that a *thick-film* vinyl finish provides against wear and corrosion.

You can choose your own color; in fact, you can *change* colors any time without obsoleting a large inventory of coated metal, as with laminates. Spraying permits application after fabricating operations, so scrap loss, seams and raw edges are eliminated. Typical use: trim or overall finish on washers, dryers and other appliances.

M&T Spray-on Vinyls are up to ten times more abrasion-resistant than ordinary textured enamels. They are inert to caustics, acids, alcohols, oxidation, water, salt; unaffected by grease, perspiration, inks; immune to marring, chipping, peeling. Write for more information.

M&T **coatings and finishes**
METAL & THERMIT CORPORATION
General Offices: Rahway, New Jersey

GUARANTEES CAN BE DANGEROUS . . .

particularly if they are designed as sales and advertising gimmicks as contrasted with an earnest attempt to stand behind better-built products of proven quality.

This was brought forcefully to our attention recently when a friend related an experience in connection with his purchase of automobile antifreeze solution.

Advertising during the fall months by major producers of petroleum offered what appeared to be an unqualified guarantee on antifreeze for a complete season. The advertising stated that the radiator hose, connections, etc., would be inspected at the filling station, and that if "chilly" antifreeze were purchased, the motorist could drive worry-free for the entire winter. It was indicated that if some of the antifreeze were to dissipate during the winter, all the motorist need do is drive into a "speedy" station and new antifreeze would be added *free of charge.*

It didn't work that way

Now back to my motorist friend who returned from a trip one day, pulled in at his regular station and found that the solution was, in fact, down to a dangerous point for winter travel. It is important to note that the antifreeze was added new in the fall, at this very same station, and that a guarantee card was attached to the radiator.

If memory serves me, the bill for the antifreeze added was only about $1.70, but when the motorist suggested that there should be no charge, inasmuch as it was guaranteed for refill, the filling station attendant and, in turn, the manager-owner, refused to honor the guarantee.

A 20-year customer gone

My motorist friend informed me that he then started a "slow burn" and not too slow, at that. Certainly it was not the amount of money, but the principle involved.

Here's the important point. This motorist had been buying gasoline for two cars at this same filling station over a period of twenty years. From all indications, both the filling station and the gasoline producer have lost a 20-year customer. He has taken his business to another station two blocks away, which carries another national brand.

Without any intention of conducting a "survey," we did contact a friend in the gasoline business who handled the same brand as that formerly used by our motorist friend and found that in this case, the operator had "signed up" on the guarantee program. When a motorist came in to his station, regardless of whether or not he had ever seen him before, the guarantee was fulfilled. His statement was, "Why shouldn't I? — All I need do is send the sales slip to the company, and I get my money back."

Call the motorist narrow-minded, short-sighted, or whatever you will. The fact remains that many, many buyers of materials and products at retail depend upon the written or implied guarantees that are advertised on a national basis, and they expect fulfillment of these guarantees without question.

What about appliances and other metal products?

It is quite a jump from gasoline to home appliances or other fabricated metal products sold at retail; nevertheless, the same "public" buys both and their reactions may very possibly be the same.

It is not our intention to imply that "gimmick" guarantees have been used extensively in the appliance and fabricated metal products field, but there does appear a possibility of increased use of longer and more liberal guarantees. This subject has been discussed at a number of business and technical meetings and will undoubtedly come up for further consideration.

Certainly, if a product is built to last longer and to do a better job, and combined research and field reports indicate the practicality of extending guarantees, this would seem to be entirely to the advantage of the purchaser and could be helpful in increasing sales.

The one point we would like to make here, by the illustration used, is that *unless* guarantees are carried out faithfully at the retail level, they can, under some circumstances, retard sales and prove harmful to the product manufacturer over the long pull.

Dana Chase

EDITOR AND PUBLISHER

The new generation of U.S. autos fends off corrosion . . .

GUARDED BY GALVANIZED STEEL

Use of galvanized steel sheets in the automotive industry has increased by more than 700% since 1954—and more automotive applications are on the way.

As a result of this growing addition to Detroit's diet, both consumers and manufacturers are benefiting. To car owners, every pound of galvanized steel means more complete corrosion protection, added durability and savings in maintenance. To manufacturers, galvanized steel's simplified fabricating procedures bring reduced costs. Head and tail lamp housings, for instance, formerly required five or six steps when zinc plated or painted after stamping. Now they are moved direct from press to assembly line with their tight zinc coatings completely undamaged by fabrication. This also applies to side members, rocker panels, front and rear rails and cross members.

WEIRKOTE, IN PARTICULAR! One of the leading galvanized steels, Weirkote is widely used in the latest model automobiles. To the inherent strength, economy and versatility of steel, Weirkote adds enduring zinc protection via the modern continuous process. As a result, it can be worked to the very limits of the steel base without chipping or peeling. And it assures you long-lasting protection against corrosion. It is manufactured by two National Steel divisions, Weirton Steel Company and Midwest Steel Corporation. Write Weirton Steel Company, Weirton, West Virginia, for further Weirkote details.

MIDWEST STEEL
Portage, Indiana

WEIRTON STEEL
Weirton, West Virginia

divisions of
NATIONAL STEEL CORPORATION

It's time that all of us — manufacturers, distributors, contractors, consumers, and particularly our high-priced labor — realize that our individual and collective bread is buttered on the product tags and labels that say "made in USA." — *T. E. Veltfort, managing director, Copper & Brass Research Association.*

Examining various [home laundry] products, I would expect that the largest single unit increase will come in automatic washers, although the percentage increased will be modest. Dryers and combination washer-dryers should show the largest percentage increase, because of the relatively low saturation. — *Claire G. Ely, AHLMA chairman and vice president, marketing, The Maytag Co.*

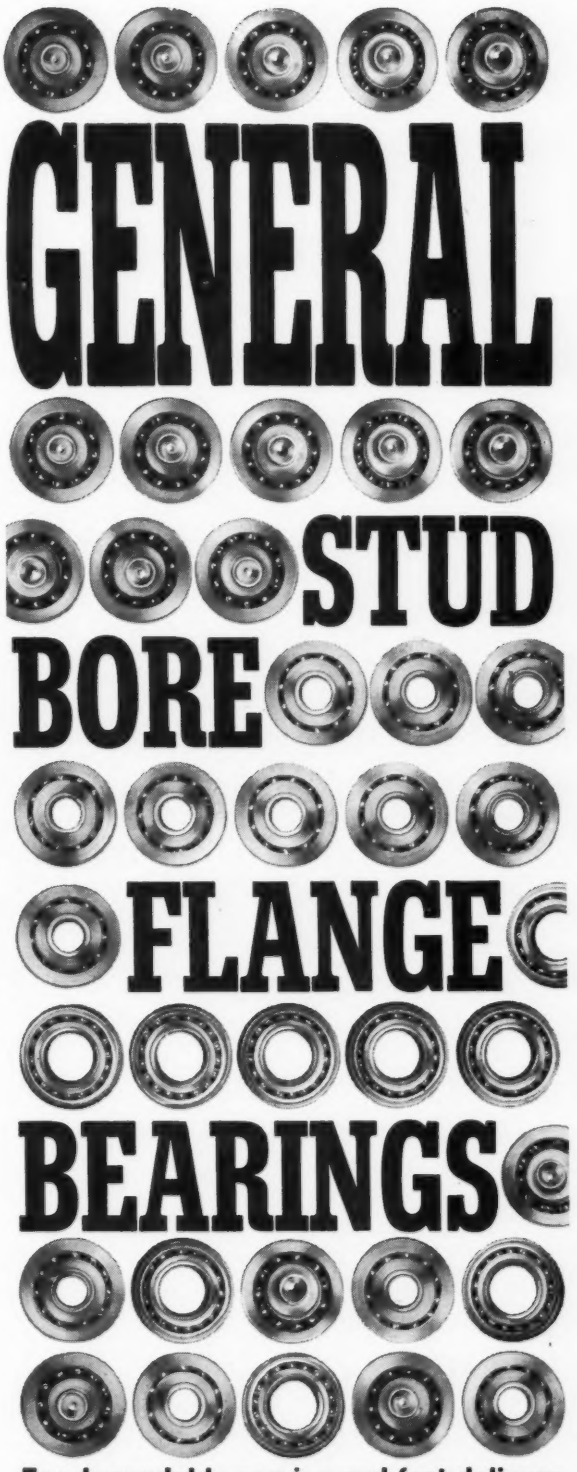
The number of vending machines in operation will double in the next five years. — *Stainless Outlook.*

We invite foreign competition in this country and we'll meet it from any nation or group of nations on a quality, performance, design and price level. But we want this competition based on something besides medieval, cheap-labor standards. — *Ross D. Siragusa, president, Admiral Corp.*

Imaginative and functional small appliance packaging can not only ease handling and storage, but can also increase sales and serve the ultimate customer. — *R. J. Sargent, general manager, Portable Appliance Div., Westinghouse Electric Corp.*

Actual consumption of steel in 1960 fell only three percent below the all-time record year of 1955, according to our estimates. Thus most steel buyers actually used more steel than they purchased, which, of course, means that some of what they consumed came from their own inventories. Inventories are now, however, estimated to be about as low as they can be expected to go. — *Roger M. Blough, chairman, U. S. Steel Corp.*

With the flight of the soaring '60's grounded and billion dollar industries wallowing in profitless prosperity, there is now a reawakening among business men. — *Judson S. Sayre, chairman of the board, Norge Div., Borg-Warner Corp.*



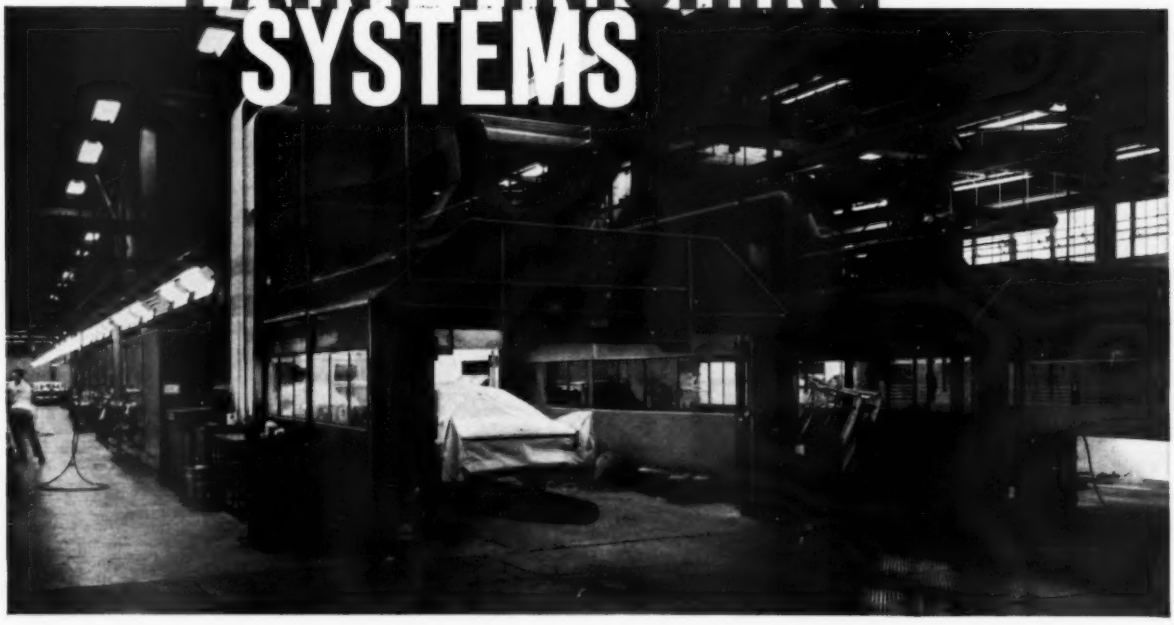
For dependable service and fast delivery, choose General low-cost, unground ball bearings and bearing assemblies.

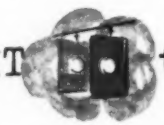
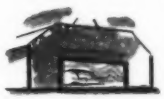
GENERAL BEARING COMPANY

General Bearing Co., Inc. / P. O. Box 455A, West Nyack, N. Y.

ROSS Air Systems

COMPLETE PAINT FINISHING SYSTEMS



Everything from METAL CLEANING through DRY-OFF on to FLOW COATING into SOLVENT VAPOR ENCLOSURE to FLASH OFF into PRIME COAT BAKE OVEN on to FINISH COAT  then to FINISH COAT BAKE OVEN  into COOL on to INSPECTION

The whole system is an engineered combination of the most modern ROSS components including metal preparation units, spray booths, flow coat units, dry-off ovens, air make-up units, air heaters, conveyors and air conditioning units. Now, a single responsibility for the entire system—engineered, designed, constructed and erected by J. O. Ross Engineering. For more information send for Paint Finishing Bulletin No. PF 401.

MFR

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ATLANTA · BOSTON · DETROIT · LOS ANGELES · SEATTLE · MT. PROSPECT, ILL. · MOBILE

40 million

50 million

60 million

Now over 77 million

major home appliance units have been finished with dependable Du Pont DULUX® Enamel

Here's why—Appliance manufacturers can count on the unvarying high quality of "Dulux" high-bake enamel because of Du Pont's rigid quality control during manufacture. Performance? Excellent. "Dulux" gives long, trouble-free service . . . resists chipping, cracking and discoloration. Small wonder manufacturers have used Du Pont "Dulux" Enamel on over 77 million appliance units!

This same caliber of performance is yours whether you now use flow-coating, roller coating, dip-tank finishing, hand-spray or automatic systems—including electrostatic coating. Remember, Du Pont technical service is always ready to help you develop better finishing at lower cost.

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DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

The Chicago Winter Market

Admiral

Jack Schoner, sales manager of ranges

"The Admiral convertible range gets its name from the fact that it can be used free-standing or built-in. It is essentially a built-in range, except that instead of having a separate surface unit and oven, they are combined as one to fit into a remodeling job or any built-in setup, flush with the counter top. Instead of having the conventional backguard, it has all controls near the back of the range as a center cluster on the range top.

"The deluxe model has the same controls, except that it has an elevated control zone, containing the clock and automatic features. It still can serve as a built-in range because the overall height of the control zone is only six inches above the surface of the range."

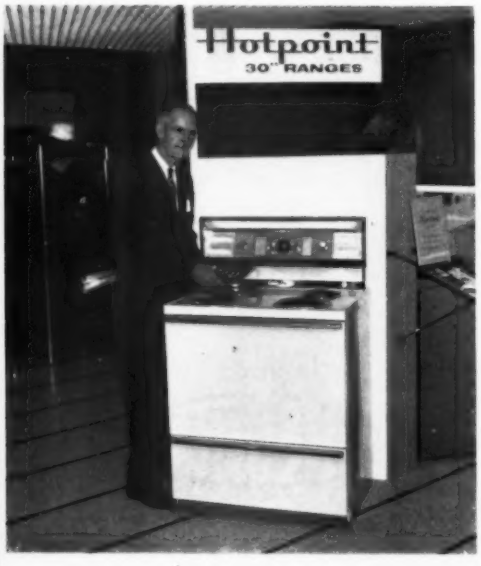
Philco

James M. Black, marketing manager of appliances

The large door on this single-oven range (left) is removable. The 36¼-inch-low drawer is also easily removed. It is full width and full depth of the range. This range has non-fog window and motorized rotisserie.

Philco ranges have a small "quick-chef" combination broiler and oven for small meals. The "quick-chef" has a chrome-plated liner, completely removable, and stainless steel shelves and trays.

In the foreground is the Philco 1961 tilt-top electric range. This is a 40-inch model. The complete range top raises to facilitate cleaning. The "drip tray" is one complete piece of stainless steel, screwed solidly to the frame of the range, so that it can be wiped as one piece when the range top is raised.



Hotpoint

Harold Hulett, general manager, kitchen appliances

"We retooled and redesigned our complete cabinet range from the low end to the top end. We have restyled and retooled most of our built-in lines; brought out three new drop-in ranges; retooled, restyled, and improved our three models of under-counter dishwashers; introduced a new line of electric baseboard heating; and improved our food waste disposers.

"The refrigeration line has been restyled and substantially improved all along the line, particularly at the middle and low end of the line. We have introduced three new models which we call 'compact refrigerators' — compact because they are large on the inside, small on the outside. They are especially economical in operation."

(The refrigerators, freezers, and air-conditioners come under I. L. Griffin, general manager of the refrigeration department.)

Magic Chef

S. B. Rymer, Jr., president

The lineup of ranges shown with Rymer is a complete new line, first introduced at this Market. It includes 30-inch ranges, 36-inch ranges, built-ins, standard oven and 20-inch oven ranges.

A new feature is a high performance Uni-Burner with extreme flexibility (a rating of from 500 Btu to 12,000 Btu hourly). Two burners, complete with tubes, tray, and other components mounted together can be detached from the range as a single unit for cleaning.

Crown Stove

Jack Rogers, vice president in charge of sales

"This package unit includes a porcelain enameled double bowl sink, complete with fixtures; a surface unit (built-in); a range hood enclosing filter and fan; and a built-in oven and broiler. This is the Crown Built-In Oven-Broiler unit, with the square thin-line design."

Dictet tape recorded interviews exclusive MPM photos

Woman's Friend Co.

Harry M. Fatz, Eastern district sales manager

"This new teardrop design washer is manually set for any desired time cycle. It then shuts itself off at the end of the designated time cycle, and the conventional-type wringer is used for wringing the clothes. This unit will not be in production until late April, 1961."

The company offers the Monarch brand and also Woman's Friend. Photograph shows the new semi-automatic model "Custom."

Kitchen Aid

Howard Bogash, sales manager

"The Superba series has three controls: the full cycle control provides two washes, three rinses and drying time; the utility and utensil cycle is basically the same as the full cycle, except that the drying time is five minutes instead of 18 minutes; then the rinse and hold cycle, which provides one wash only, to wet the dishes down so that they will hold until the next regular washing time."

Welbilt

W. Miller, national sales manager

"The average home with two or three bedrooms could be very easily cooled with this Alaskan 1W Series 6 air conditioner (20,000 Btu rating) when it is operated for any length of time. We recommend this, in fact, for something like 1300 sq. ft.

"This machine employs a new high torque-type compressor, which is much more efficient and effective than anything that has been designed in the past and, as a result of this, the cooling function of the machine develops much quicker and easier. Through new engineering advances, we have been able to sound trap the noise levels and, as a result, this machine cools air with a minimum of sound."

Manitowoc Equipment

Glenn Millhollin, field sales manager

"One of the newest things introduced by our company is pushbutton defrost for the freezer compartment of a two-compartment combination refrigerator-freezer and in the upright freezer line.

"The demonstration unit *(photograph)* shows such features as vacuum testing (units get a 100-percent vacuum test before they are released from the production line), air tight construction for lower operating costs, and, an exclusive feature in an upright freezer — wrap-around coils. Fiber glass insulation, hydrolene sealed cabinet, and radiant condensers to eliminate moist exterior are also featured.

"In this unit there is no frost whatsoever on either shelves or packages."

Waste King Universal

Harold Fatt, director of merchandising

"Refinements have been made on our ranges since they were first introduced. For instance, the backguard, which was formerly brushed chrome, has been changed to white porcelain enamel. Burner grates have been changed from a gray to charcoal black.

"The new V-shaped, 36-inch surface built-in unit, featuring a new 2¾-inch deep gas burner box, enables the builder to install a full length drawer underneath the unit. This burner box compares with a normal thickness of 5½ to 6 inches.

"The latest Waste King-Universal food waste disposer, released in October, has twice the speed of grinding and three times the life, due to a redesign of the grind ring and turntable."

(Pictured with built-in gas unit is A. A. Barnhart, product manager, domestic range division.)

more market comments and photos page 77 →

MPM

suggestion box

beeswax, cardboard or wood, and epoxy resin team up to make economical dies for runs of up to 500 units on small aluminum components

This epoxy resin blanking die is one of many used by Emerson Electric Mfg. Company to blank small electrical and aircraft component parts.

Emerson Electric saves on tooling costs with epoxy-based blanking dies

EPOXY RESIN-BASED blanking dies are offering an economical way to fabricate aluminum sheet metal into small electrical and aircraft component parts at Emerson Electric Mfg. Co., Electronics and Avionics Div., Washington Park, Ill., according to Bryan Doherty, Emerson Electric project engineer.

Emerson Electric produces blanking dies by using simple Kirksite or cold-rolled steel male punches machined to the exact configuration desired. These punches are laid up with ¼-inch x ¼-inch beeswax around the upper periphery and a cardboard or wood rectangular dam approximately two inches larger around them.

The material is then poured at a ratio of 10 parts epoxy to two parts hardener into the rectangular retainer between the male punch and wood dam.

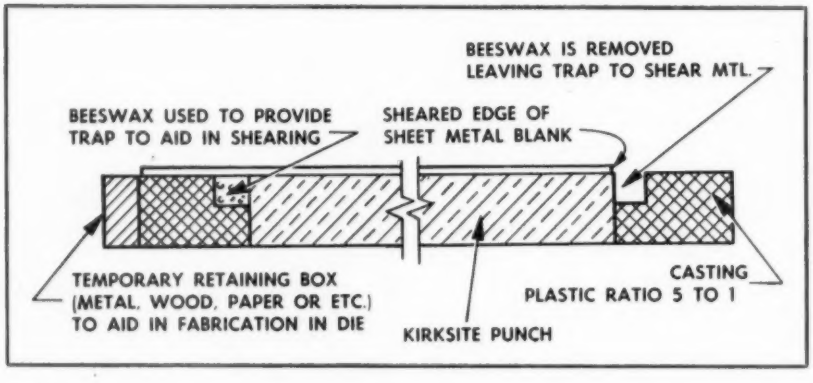
Cured at room temperature

The epoxy resin is cured at room temperature in three hours without shrinkage or loss of desired size and shape. Paste wax serves as a parting agent and beeswax leaves a ¼-inch x ¼-inch trap around the top and outer periphery of the male punch. After the plastic cures, the clearance wax and retaining box are removed and the tool is complete.

Blanking dies are used in a conventional drop hammer press with a rubber head encased in a steel retainer 18 inches or more in diameter. The rubber head serves as a shearing agent for the blank stock which consists of rough sheared material extending over the ¼-inch x ¼-inch trap approximately ¾ inch on either side. The trap properly starts the shearing action as the rubber head strikes the die.

Runs up to 500 units per blanking die are possible, Doherty reports. Average thickness of the dies is one inch and they vary up to 10 inches in width and length, a size which permits several of them to be used simultaneously on a drop hammer bed. The dies are used to blank aluminum sheet up to .062 inch, although most of the material is .040 and .051-inch stock.

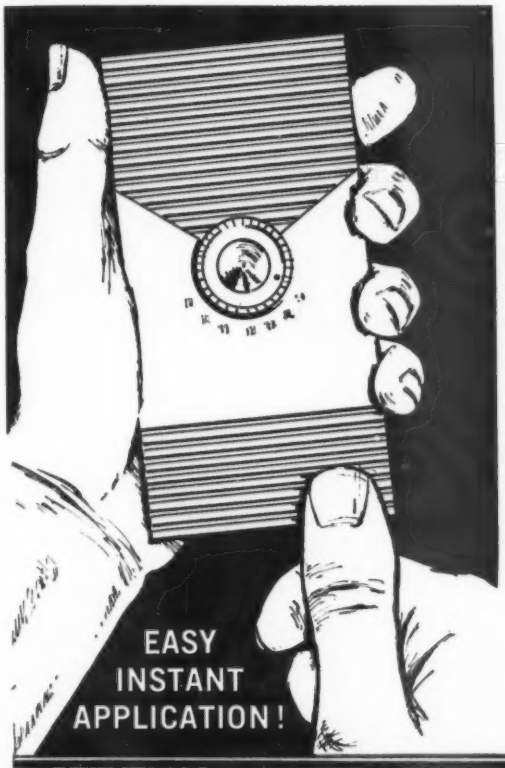
Cutaway drawing of typical blanking die used in Emerson's Washington Park, Ill. plant.


BEESWAX IS REMOVED LEAVING TRAP TO SHEAR MTL.
BEESWAX USED TO PROVIDE TRAP TO AID IN SHEARING
SHEARED EDGE OF SHEET METAL BLANK
TEMPORARY RETAINING BOX (METAL, WOOD, PAPER OR ETC.) TO AID IN FABRICATION IN DIE
KIRKSITE PUNCH
CASTING PLASTIC RATIO 5 TO 1

Savings in labor one advantage

Other advantages cited for the blanking dies are cost savings in labor compared to alternative dies with top and bottom shoes and guide pins in conventional punch presses, retention of the exact shape despite temperature changes or humidity, and flexibility of the epoxy which makes minor repairs on edges easy to accomplish.

For further information about the blanking die application with epoxy resin material, write Special Projects Editor, Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.



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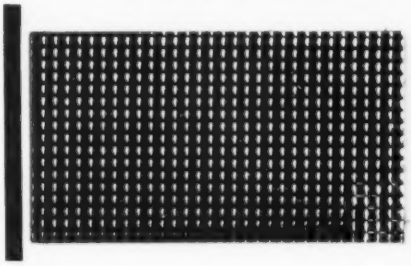
EMBOSSED DESIGNS IN 6 METALLIC COLORS...

BACK PEELS OFF FOR ADHESION ▼



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DIE CUTS

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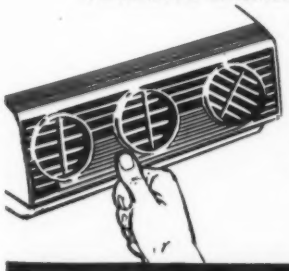

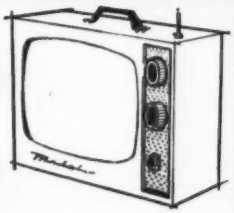

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The door on this wall oven drops down out of the way to permit shelf adjustment or cleaning. A non-fogging picture window and interior light enable the homemaker to watch the progress of her baking. The divided cooking top has Flex-O-Heat controls with an unlimited number of heat settings, and a thermostatically controlled ATC unit that automatically maintains the desired temperatures.

The Supreme portable dehumidifier can dehumidify an area up to 10,000 cubic feet, and removes up to a pint of water per hour. The moisture container has a capacity of 16 pints of water. A hose can be attached to a threaded fitting and placed in a floor drain to permit continuous drainage. The deluxe Imperial model can dehumidify up to 13,000 cubic feet, and removes 32 pints of water.

This deluxe 30-inch "convertible" electric range can be used free-standing in a kitchen, or can be converted to a customized built-in oven and surface unit without costly remodeling expense. It can be installed flush against a wall and between cabinets. A strip of moulding can also be installed along the back to match the kitchen decor. Automatic control center is located at back.

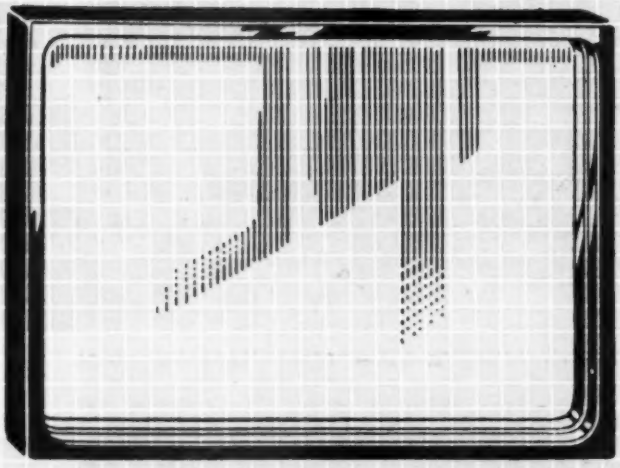
New 1961 products by Admiral

This 14.5 cubic foot upside-down refrigerator-freezer is one of the five models in the 1961 line which never require defrosting in either the fresh food or frozen food compartments. Moist-cold system in the upper section prevents fresh foods from drying out. The covered meat keeper can store 18 pounds of meat. The freezer has a capacity of 143 pounds and remains free of all frost formations. Door shelves in both compartments provide storage space for eggs, butter and cheese, and tall bottles. There are 3½ shelves.

This portable dishwasher is top-loading and can handle up to nine place settings or a total of 99 pieces. The top rack folds back to simplify loading of large dishes in the bottom. A 900-watt heating element maintains minimum 140-degree water temperature for washing dishes, glasses and cooking utensils. The complete wash-rinse-dry cycle requires 36 minutes and uses 6.8 gallons of water. Dishes can be added during cycle by unlocking and raising counter-balanced lid.

The Super Son-R remote control can perform 12 different operations. The transistorized power amplifier in the air conditioner has seven transistors and one diode, and is always ready to receive the signal from the two-button unit. Once installed, the two hp air conditioner never has to be touched.

PREWAY . . . one of the long line of satisfied PERMA-VIEW® users.



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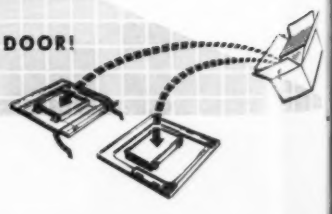

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An electrical control panel is installed as a separate sub-assembly. Wiring the galley's ovens, lights and components is often difficult because of design emphasis on strength and rigidity. Circuit breakers backed up by fuses are used instead of switches. Two separate panels monitor the oven compartments, temperature, roll warmer, etc.

toward the front (the direction in which the drawers would slide if not restrained), 6G to the rear and 9G down. With load factors like these, joint strength and material selections are extremely critical.

Skygalley assembly takes advantage of every conventional method of fastening, with one or two which differ from the norm. Rivets, bolts, spotwelds, and adhesives are the usual joining techniques. Type of fastening used depends on stress analysis. Where spotwelds are best, a rivit is inserted at the end of each seam to make doubly sure. Up to 5000 rivets may be used in a single galley, most of them No. 4 (1/8 inch); the rest are No. 5 (5/32 inch).

For the most part, only two metals are used in Skygalleys; stainless steel sheet, and aluminum sheet and extrusions. Stainless steel is used for surfaces which are likely to be exposed to moisture. Some sections call for textured stainless because of its added strength and to enhance the appearance of the galley. The textured sheets in diamond pattern wear well, disguise scratches and dents, and are easy to keep clean. Thickness of the stainless steel varies from .010 to .040 inch. Texturing adds about 50 percent to a panel's "effective" thickness. Framework of the galley is composed mainly of stainless steel angle strips and U-channels, with aluminum extrusions being used for slides and some supporting sections.

Jet transport galleys built to 1/32-inch overall tolerance

by Anthony J. Fiori • CHIEF ENGINEER, REF MFG. CORP., MINEOLA, N. Y.

STAMPING AND FORMING SHEET METAL to tolerances of plus or minus 1/32 inch is not unique to our shop. Yet it takes much engineering skill and care to assemble these components — close to 1000 of them — into one structural unit whose overall tolerance is no greater than that of a single part. The Skygalley, designed and built by REF, is just such a giant precision jigsaw puzzle.

The corporation has supplied food service installations for jet as well as conventional-powered aircraft flown by American, Eastern, Western and Continental Airlines in United States service, and for such foreign service lines as KLM, Pan American, Panagra, Trans-Canada and Canadian Pacific. The plus or minus 1/32-inch overall tolerance is a *must* for the complicated galleys. REF also builds helicopter sub-assemblies and a complete line of jet engine test stands for checking out fuel, hydraulic, pneumatic and electrical systems.

Successful galley design depends on stress analysis

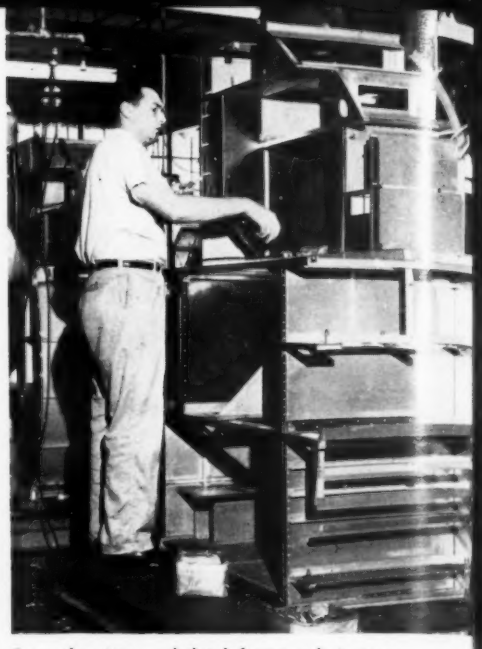
Stress analysis is the key to successful galley design. Galleys must withstand a load of 12 times the force of gravity

Standardization will cut costs

One of the biggest production problems has been lack of standardization. Each airline requests a different galley installation. Recently, however, some progress has been made which should result in definite economies for the carriers concerned. For example, American Airlines ordered galleys for the Boeing 707's and Lockheed Electras which have the same contour and components. Differences in the diameter of aircraft fuselages are overcome by changing the width of trim running along the top and side of the galley from four inches on

Press brake forms counter top for Skygalley. Stainless steel sheets from .010 to .040 inch are used throughout. Front panels and decorative sections are formed from rigidized stainless, to give these components added strength.

Spot welding is used extensively. Welded seams are riveted at each end to prevent failure under stress. Up to 5000 rivets are used to join the various parts of the Skygalley. Rivets used are ⅛ inch and 5/32 inch.



From the time a skeletal framework is started, until a finished and approved galley is ready to ship, each unit remains on a numbered assembly stand. The same two men perform all assembly operations on a single galley.

the Electra to 1½ inches for the 707. Four Skygalleys are installed in each 707; two in the Electra.

A typical galley produced by REF includes (from top to bottom): storage compartments; "Liquispenser" (coffee brewer and beverage dispenser); complete three-section electric oven; heated roll drawer; storage for extra coffee pot; ice cream drawer chilled by dry ice; liquor cabinet; food storage; working counter; refuse compartment; and a complete electrical control panel. All components fit into a unit that averages five to six feet high, four feet across, with a two and one-half-foot depth.

Smaller galleys are also built. One of the newest business airplanes — Grumman's turbo-prop "Gulfstream" — has a galley measuring only 20 inches high, 24 inches deep, and 48 inches long. Included in this small unit are an electric oven, dry ice-cooled refrigerator drawer, and hot beverage container.

One example demonstrates the degree of customizing that is sometimes necessary. Storage compartment doors on galleys for one U. S. airline were not originally designed as seats. However, during long flights, stewardesses pulled the recessed doors halfway out to sit on them. Because the airline found it practically impossible to keep the young ladies from using the doors as seats, doors are now built to support a centrally-applied load of up to 150 pounds when half open. Actually, all Skygalley components provide more strength than called for by specifications.

REF also builds food tray carriers; they must be sturdy enough to withstand the rough handling received during loading and unloading. Within the galley, containers rest on friction-free plastic-topped metal strips, allowing the containers to slide easily in and out.

Materials fight corrosion and improve sanitation

All aluminum Skygalley parts, whether structural or decorative, receive a chemical treatment to improve scratch resistance and to improve adherence for painted parts. Where corrosion is a threat, aluminum galley parts are painted.

To keep moisture or condensation from weakening spotwelded or riveted seams, a sealant is applied on all faying surfaces before final assembly. After sub-sections are in place, a bead of sealant is run along the seam to make doubly sure that corrosion is prevented. Beside eliminating moisture problems, the sealants keep food particles and spilled beverages from entering into cracks in the galley where bacteria could breed.

Other materials designed into a galley include various plastics and balsa wood. Electrical insulating control panel boards are made in REF's Plant No. 2 from fiberglass-reinforced polyester laminate. The sheets are from .025 to .032-inch thick. Inside the storage compartments, runners on which food tray carriers slide are topped with plastic for smooth, friction-free service. The same material is used on the galley side panels, when woodgrain patterns or colors and designs are required to harmonize with the aircraft's decor.

Aluminum door slides for the oven and storage sections are coated with a plastic, which has good high-temperature resistance and a low coefficient of friction, so that slides move smoothly and will not stick. Its use in the galley replaces petroleum greases or oils which might contaminate food. Silicone rubber gaskets around the oven and roll warmer doors seal in heat and improve heating efficiency.

Blocks of top-grade end-grain balsa are inserted as backing between the stainless steel surfaces of compartment doors and the galley's work counter. The balsa considerably increases the solidity of doors and counter, without adding much weight.

Electrical controls and wiring

The strength and rigidity designed into the galleys sometimes make it difficult to install electrical wiring and controls. Arnold Page, our assembly foreman, claims that our engineers design

galleys for structural strength and to accommodate food equipment. Then whatever space is left over, and sometimes it's hard to find, can be used for electrical controls and wiring.

Safety is the prime factor in the design of the electrical systems. Circuit breakers backed up by fuses are used to eliminate switches. A list of the circuits in a typical galley includes one each for the three oven warming sections, a separate circuit for the high-low temperature switch (300 or 200 F), roll warmer, hot-cup outlet (for warming soups, etc.), coffee brewer, and galley lights. Electrical control panels are wired as separate sub-assemblies before installation in a galley.

The entire galley has two quick-disconnects: one for electrical current, another for aircraft water supply leading to the Liquispenser. Because the electrical supply differs from one airplane to another, galley circuits and controls must be individually designed.

Quality control checks daily

During its five-week assembly period, each Skygalley is inspected more than a dozen times. Visual checks are made of seams, welds, and surface appearance. Checking fixtures, templates, and other devices are used to verify contours and dimensions.

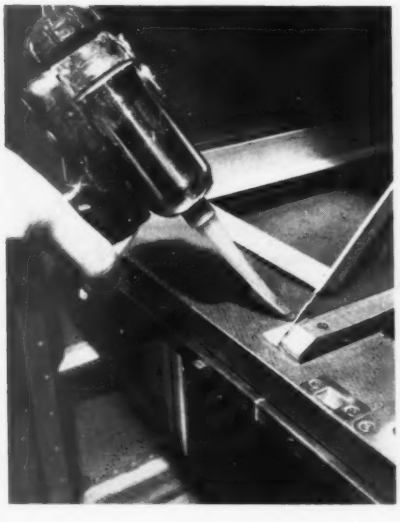
From the moment a skeletal structure begins to form on an assembly stand, a permanent two-man crew is responsible for construction of a single galley. The galley is never moved from the stand until ready for final shipment. Erection stands themselves consist of a section of steel plate resting on I-beams, with up to eight leveling screws to assure a steady, perfectly horizontal working surface. Nine hundred and fifty hours are expended on each Skygalley.

Once a day, the quality control department inspects each galley on the line. Particularly careful checks are made during critical assembly stages.

Early in the spring of last year an unusual REF product was use-tested. A small food warming oven was part of the equipment tried out during Project Hermes, a U. S. Air Force experiment to determine the effectiveness of various space capsule components, prior to sending our astronaut into orbit. The oven was used to heat plastic squeeze tubes containing food concentrates which were consumed by the "astronaut" during the seven-day trail. The space food warmer was a natural for our company, because of our experience in producing food service installations for the world's leading airlines.—MPM

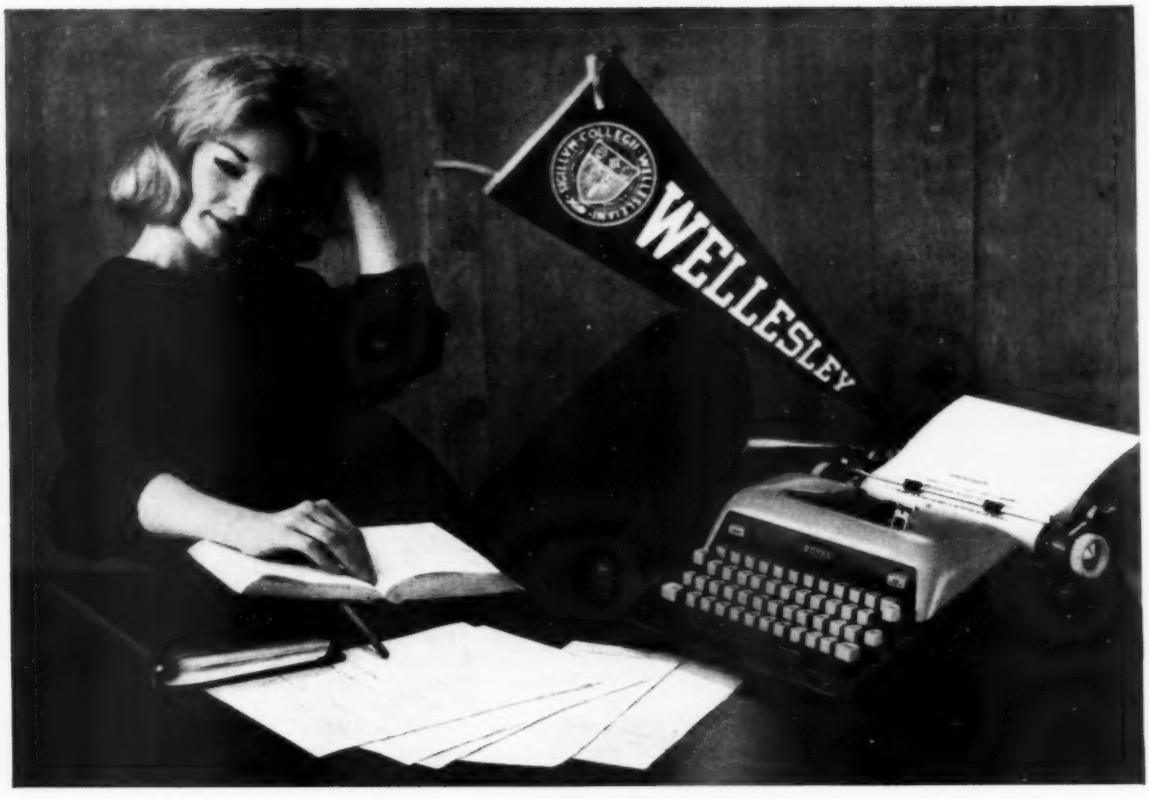
Typical dual Skygalley installation in Boeing 707. Both galleys have identical components, but are constructed "opposite hand." End panels were designed to harmonize with aircraft's interior decor. A third unit is located forward in the plane.

Electric-powered right angle screwdriver is used in Liquispenser section of a Skygalley. Each galley contains almost a thousand parts, complicating assembly. Galleys must withstand loads up to 12 times the force of gravity.



Applied along all seams, a bead of sealant protects galleys from corrosion caused by condensation or spilled food. Faying surfaces are also coated with sealant before assembly to help protect against moisture.

Galleys are completely inspected as many as 15 times during their five-week assembly period. Checking fixtures, templates, and measuring devices help the inspectors to maintain the 1/32-inch overall tolerance.



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Reports Mr. C. H. Farrington, Production Manager of Royal McBee's new "showplace" plant in Springfield, Mo.: "We particularly like the custom designed automatic programming on our MEAKER. We plate nickel and chrome or just nickel on one unit, and either bright or "black" zinc on the other, in any sequence desired."

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Orders for parts flow from automatic order printer. Ke punched customer order cards go into equipment to sta process of inventory adjustment and order printin

modernized Service Center speeds replacemen pa

RAMAC technician Ira Smyrl works at programmer of IBM's order processing equipment. Two glass-enclosed "memory units" can be seen at left. Automatic order printer is at right in photo.

AN MPM STAFF FEATURE

A WHIRLPOOL APPLIANCE distributor in Iowa receives a call from one of his dealers. A customer's automatic washer needs a new timer. The washer is five years old, and the dealer does not have a replacement timer for that particular model.

Is there such a part in the distributor's stock?

A check of inventory reveals that because of the light demand for this particular timer the part was not re-ordered after the last one was used several months earlier. The time is 9:00 am.

The distributor sends a wire to the Whirlpool Service Center in La Porte, Ind., requesting a rush shipment of three timers. The wire is received in the Service Center's mail room at 10:00 am. Here a "rush" series factory order number is assigned. The order goes through an "editing" process for verification of correct part number and description, and IBM cards are key punched for further processing.

The punched cards are sent to RAMAC equipment for electronic processing. By 12:15 the same day the order is delivered to the factory, where the timers are taken out of stock, packaged, addressed and put in the mail.

The Iowa dealer has received one-day service, and the customer's washer will be back in operation in the shortest possible time.

This is how Whirlpool handles urgent requests for replacement parts at its La Porte Service Center. Obviously, all parts cannot be shipped the same day the order is received, but orders received by phone or wire before 11:00 a.m. are considered "rush" and are set up to be processed the same day. Individual rush orders are generally limited to five different items, or a total of 25 pieces, or a value of $50.

A recent modernization of the Service Center's facilities is largely responsible for the feasibility of one-day order processing. Handling of orders falling under other categories of urgency has also been streamlined.

new Whirlpool facilities at La Porte, Ind. include automatic order processing equipment

How they do it

The improved system is built around the 305 RAMAC system. Previously a conventional IBM punched card system was used for processing parts orders. The main difference between the two systems is in the method of storing information — with the card system, data was stored on punched cards; under the RAMAC system all information is stored on magnetic discs.

The "memory unit" of RAMAC consists of two batteries of glass-enclosed magnetic discs. Fifty discs are mounted horizontally in each battery. The combined storage capacity of the 100 discs is 20 million digits. Information is fed to the discs by magnetic impulse.

Under the previous system, inventory information and reports were obtained by systematically sorting and summarizing the punched cards. Depending on the nature of the information wanted, it was necessary to sort anywhere from a few to thousands of cards. This process often consumed many hours in the past.

er. Ke enn R. Willis, general manager of Whirlpool Service to sta enters (right) and assistant Frederick B. King examine key-printin nched order card used in order processing equipment.

(Right) — Small, high-volume parts are prepackaged upon receipt from vendor. These parts include such items as pumps, timers, gaskets, hoses and belts. Ideally, these parts are packaged far enough in advance of purchase to maintain a 30-day supply.

EXCLUSIVE MPM PHOTOS

en part orders

With the new system, all information is fed into the machine at random and it automatically updates similar information already contained on the storage discs. Thus, up-to-date information is always available.

The big change

The changeover to the RAMAC system took almost three years of planning, schooling and testing. Finally, after three days of feeding year-end inventory data into the unit, it was ready to go. Its magnetic discs contained corrected inventory figures along with part numbers, locations, prices and quantities.

On January 3, 1960 pre-punched cards containing details of customers' orders were placed in the console. Seconds later finished orders were rolling out.

Cartons are being taken off conveyor at end of the "pre-pack" line and placed in wooden crates for transportation to the storage area.

Six major operations

Six major operations are performed simultaneously by the new system. The equipment writes orders, adjusts inventories, calculates, writes back orders, creates automatic substitutions, and punches billing cards and stock selecting cards. The system is programmed to handle 20 cards a minute and print 200 factory shipping orders per hour.

Data from the cards and from the magnetic storage discs is taken into the unit's calculator, substracted from current inventories, priced, and checked against the minimum inventory. The corrected inventory and other information is then returned to its proper location on a record and the information needed to complete the order goes to the printer where the orders are automatically typed. If an error occurs in key punching, or if the part number and its location do not correspond, the machine stops and this exception is typed out by an automatic typewriter.

On the basis of urgency

Incoming replacement part requests are given factory order numbers on the basis of urgency. "Rush orders" (previously mentioned) are assigned numbers in the 600,000 series, and are shipped the same day if the order is received by 11:00 am. Orders in the 300,000 series (mail orders, ship direct and customer-waiting orders) are due for shipment the day following receipt of order. Stock orders, which fall in the 0-299,000 series, are processed and given to the factory on the day the orders are received (except Monday). These orders are shipped in three to five days.

Some spare parts, because of low demand, are not stocked in the Service Center, but are shipped direct from the supplier's plant. Orders for these parts come under the "vendor drop shipment" classification (750,000 series), and are scheduled for shipment from the vendor as soon as possible. For purposes of reporting, they are considered delinquent four days after receipt of order.

Classification of orders

The final classification of orders is "distributor drop shipments" and export orders, which fall in the 500,000 series. Distributor drop shipments are orders made by Whirlpool distributors for parts which are to be shipped directly to a dealer or customer. These orders are to be given to the factory on the day received (except Monday) and shipped within four days.

Coordinating two centers

In addition to the headquarters center in La Porte, Whirlpool has another Service Center in Evansville, Ind. Responsibility is divided in this way: Evansville stocks spare parts for dehumidifiers, ranges, air conditioners, refrigerators, and freezers; La Porte supplies parts for dishwashers, home laundry equipment, food disposers, and vacuum cleaners.

Recently the relationship between the

Clean, wide aisles in storage area facilitate stock selection. "Picking cart" with 10-foot ladder is visible in background.

two Centers was reorganized, bringing all responsibility for planning, accounting, customer relations, purchasing and publications under the direction of the La Porte office. Thus the function of the Evansville facility is now limited mainly to parts storage, order processing and shipping.

According to Glenn R. Willis, general manager of Whirlpool Service Centers, this centralization of responsibilities at La Porte has resulted in savings approximating $300,000.

The La Porte facility employs 433 persons, compared with 216 at Evansville. One of the problems the service organization had to contend with in the past was a marked fluctuation in employment levels. This situation was caused by seasonal peaks in replacement part orders.

Smoothing the peaks

To combat this problem, Whirlpool inaugurated a program of education in which distributors were urged to plan carefully and avoid large-volume orders on a seasonal basis. The result of this program is a more steady flow of orders throughout the year, which in turn means more efficient order filling and stabilized employment.

Order volume per week at the La Porte plant runs between 7500 and 10,000. An average of 300,000 pieces are shipped each week. Ten percent of the parts stocked make up 80 percent of the shipments.

The Evansville plant handles a similar number of orders, but ships roughtly half as many part items and one third as many pieces.

Standardization

Interchangeability of spare parts is a subject which receives much attention at the Service Center. As the company puts it, "the more parts required to service the product, the less likely the correct part will be available when needed." Obviously no parts stocking system can be 100 percent efficient in keeping all parts on the shelf against the time when they will be needed.

A reduction in the number of parts required to service a given number of appliances increases the likelihood that a particular part will be available. Assuming an "availability" factor of 93 percent, it can be expected that 70 parts out of a total of 1000 will not be available when needed. If, through standardization, the number of necessary parts can be reduced from 1000 to 100, only seven parts can be expected to be unavailable. The possibility of a part not being in stock when needed is ten times less likely.

The reduction in the number of parts in stock has additional rewards, including fewer dollars invested in service stock; less space occupied in shelf and car stock; faster inventory turnover; better delivery; improved part quality; and current design availability.

For these reasons the Whirlpool service organization assigns considerable manpower to the task of developing interchangeable parts. Results show the worth of this effort: main motor drives have been standardized to 30 motors — 140 were originally required; only 10 water mixing valves are now used — formerly 46 were required; the number of timers has been reduced from 174 to 100; and nine wringer washer tub covers do the job of 59 previous covers.

Back orders down

Another facet of Whirlpool's service operation which has contributed to better customer service is improved inventory control. In January, 1959, 6700 back orders were created. This amounted to 24 percent of the stock parts. In July, 1960 only 37 back orders (.152 percent) were created. This improvement was possible through an up-dated system of procurement, using a six-month projection of inventory requirements indicating monthly delivery requirements by date.

The procedure has not only minimized back orders, but vendors and Whirlpool manufacturing divisions have received far longer lead times. In June, 1960, 88 percent of the orders placed by the Service Center allowed more than four weeks' lead time.

Figures showing cost of shipping back orders also indicate the increased efficiency of the operation. This cost was reduced from $3,673 in March, 1959 to

Short-wave radio contact with company-owned trucks speeds short-run pickup and delivery.

EXCLUSIVE MPM PHOTOS

$100 in July, 1960. Cost reduction in this area has been accomplished with a reduced level of inventory in the plant. The inventory turnover ratio increased from 1.69 in 1958 to 2.19 today.

Getting vendors to help

A "vendor evaluation program" introduced late in 1959 is playing an important role in the company's continuing drive for improved customer satisfaction. According to R. G. Pastryk, director of purchases for the Whirlpool Service Centers, "the overall goal of the program is to strengthen company-supplier relationships."

Pastryk says the problem caused by short-run orders prompted the inauguration of the vendor evaluation plan. Here's how the program operates: Each month 60 of the firm's higher-dollar-volume suppliers are evaluated on seven points ranging from delivery promptness to pricing.

Pastryk says the point that carries the greatest weight in evaluating the vendors is "product improvement." This refers to suggestions by the vendor concerning improved product design.

The vendor who receives the highest overall rating is named "Vendor of the Month." Whirlpool honors the winning company with a certificate and a "recognition" advertisement in the vendor's local newspaper. According to Pastryk, the monthly award is actively sought by many vendors and improved service has resulted.

In the "shop"

The "shop" area of the La Porte Service Center includes packaging and shipping areas, light manufacturing equipment, parts storage, and organic finishing equipment.

The manufacturing section is equipped with several presses for forming vent boxes for electric dryers. Some light assembly work is also carried out in this area, as well as repair work on appliances damaged in shipment. Spare parts manufactured and assembled in this department are those that cannot be economically produced (because of short runs) by the company's manufacturing divisions.

A similar reason is given for the operation of the finishing equipment in the Service Center. Because of the wide variety of sizes, shapes and colors required for service parts, large-scale production finishing is not practical. The Service Center is able to paint parts on the basis of demand.

Two parts packaging areas

Two major parts packaging areas are employed. The "pre-pack" line is used to package most of the smaller, high-demand parts in advance of actual orders. Typical items which are "pre-packed" include pumps, timers, gaskets, etc.

Each package is identified by part number, quantity, and substitution numbers (for interchangeability). Prominently displayed on all spare parts packages is the trademark, "FSP," which stands for "factory specification parts." This trademark is used extensively in an educational effort to keep servicemen aware of the importance of using factory-approved replacement parts.

The other packaging line is for larger and bulkier orders which are packaged as needed.. This shipping area is served by a 100-foot belt conveyor which carries the packaged parts to the shipping floor. Smaller items are processed through a parcel post packaging line where they are individually packaged and addressed.

Parts to fill orders are taken from warehouse bins by stock selectors, or "pickers." After the parts are picked, one portion of the IBM order card is returned to the control center for further processing. The other portion of the card remains with the order for identification.

Carton is weighed at end of freight shipment packaging line. Packers are stationed along the 100-foot conveyor.

Specially built "picking carts" with 10-foot attached ladders facilitate selection of orders. Skids and electric trucks are used for heavier orders.

The shipping area handles an average of nearly 2000 parcel post and truck shipments daily; parcel post shipments outnumber truck shipments by a two-to-one ratio.

The "zig-zag" design of the shipping dock allows seven large trailers to be loaded simultaneously indoors. Short-wave radio in company trucks further expedites handling of merchandise in the local area. —MPM

This "zig-zag" shipping dock accommodates seven large semi-trailers simultaneously. Electrically-powered lift trucks are employed to stack loaded skids on the trailers.

Superior Pre-Paint Protection Racks Up More Sales,

Paint Adhesion of Air Conditioning and Heating Registers, Grilles and Diffusers Insured by Granodine

Precision forming equipment turns coil stock steel into product at Krueger plant.

At major parts producer, Krueger Air Conditioning Corporation, registers, grilles and diffusers are treated with Amchem Granodine before painting to provide them with what Krueger officials agree is a "superior finish that extends the life of our products."

FINISHING PROBLEM SOLVED

Before selecting Granodine as their standard phosphating treatment, Krueger had tried several competitive processes but were unable to sustain the final quality or eliminate rust from painted products. The results—customer complaints and rejects running up to 10 percent of total production.

Today, after three years of utilizing Granodine in a five-stage dip phosphating process, Krueger, one of the world's largest manufacturers of registers, grilles and diffusers reports virtually no rejects, increased volume and an all-around better paint finish.

COMPARISONS SELL

To tell their superior finish story Krueger sets up effective side-by-side demonstrations of untreated products and products treated with Granodine at heating trade shows. Customer interest in such displays is high and has led to more sales through

Krueger management-manufacturing team: Left to Right—J. B. Smith, Vice-President of Production; President Leo Krueger; and Ted Kleckner, Vice-President and Comptroller.

# of Amchem GRANODINE*
Fewer Rejects For Krueger

Operator employing electric hoist, lowers load of Krueger products into Granodine dip tank.

Paint line conveyor carries painted Krueger products from water-washer spray booth to inspection area.

graphic illustration of competitive advantages on Krueger's part.

Further support comes to Krueger through the use of Granodine when bidding for and successfully securing Government contracts and projects involving architects where rigid specifications exist for pre-paint finishing.

NEW SYSTEM PLANNED

Looking to the future, Krueger—with a 400 percent increase in sales over the last six years—is currently adding a new 10 acre, 100,000 square foot plant. High on the planning list is a new and virtually completely automated Granodine line. Amchem engineers have designed a unique conveyorized system utilizing overhead cleaning, rinsing and coating of Krueger products which will achieve significant cost savings and substantial reduction in gas consumption through a colder method in the clean-coat phase of the process.

If you are interested in a *superior finish* for steel products—it will pay you to investigate Granodine, the *superior phosphating* process. Your local Amchem Representative can supply the details on how you can quickly and conveniently make the switch to Granodine without interrupting production or re-designing processing facilities, while providing a substantial increase in quality of product finish!

Write for Bulletin 1380B containing detailed information on Granodine for steel . . . the finish that lasts.

*Granodine is Amchem's registered trademark for the conversion coating chemical used to produce phosphate coatings on steel.

AMCHEM ® GRANODINE

Amchem is a registered trademark of **AMCHEM PRODUCTS, INC.** (Formerly American Chemical Paint Co.)
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STAINLESS STEELS

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Specify Uniloy Stainless Steel. It's the high quality stainless that's easy to work and form. Made by one of the nation's leading specialty steel producers, Universal-Cyclops Stainless is rolled to your exact specifications.

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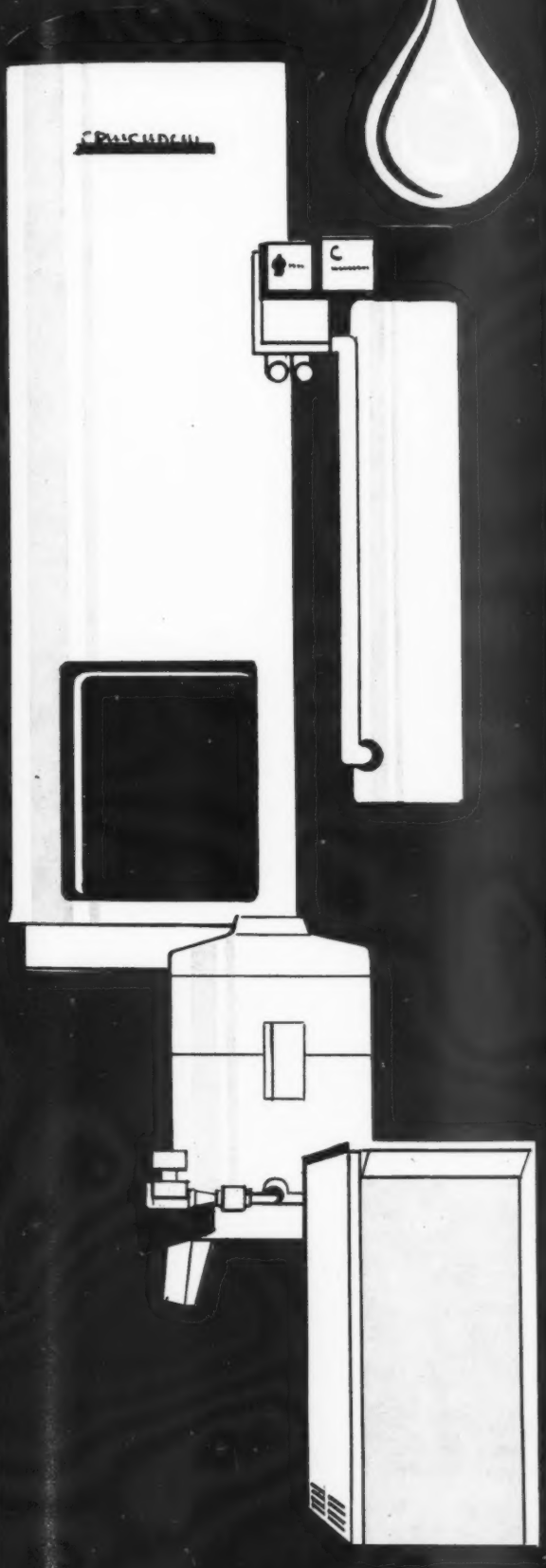
STAINLESS STEELS • TOOL STEELS • HIGH TEMPERATURE METALS

THE A.O.Smith



APPLIANCE STORY

Home and Commercial Appliance Production at the Permaglas Division

AN
MPM
SPECIAL
REPORT

Shortly after the Permaglas Div. (formerly Kankakee Works) of A. O. Smith Corp. went into full operation in 1946, we published a complete description of the plant's fabricating and ceramic finishing facilities for water heater production. Since then much has happened at the central Illinois plant. The product line has been expanded. Water heater production has tripled. New equipment has been installed and new manufacturing techniques have evolved. Permaglas has been on the move. This 16-page special report is presented to keep MPM readers abreast of the company's progress.

THE PERMAGLAS STORY — AS

MPM PHOTOS

RESEARCH FOR A BETTER WAY . . . .

a Dictet interview with F. S. Cornell, executive vice president, A. O. Smith Corp., Milwaukee

IT IS INTERESTING THAT YOU ASK about the company's background in research because, as we look back from where we are today, every business we are in has been developed as a result of basic and applied research.

Mr. L. R. Smith, father of our president, L. B. Smith, was the third generation in the business, and he is the one who developed the idea of "research for a better way" to find new ways of doing things, and a great deal of our later research has followed his lead.

One of the big examples is glass fused to steel to fight the battle of corrosion and, of course, that was the basis of our getting into the water heater business.

Currently, Mr. L. B. Smith has, if anything, been more desirous of furthering the outreaches of research in this company to perpetuate it and help it grow and to get into new fields.

The early ceramic research was started to develop glass lined pipe, which turned out to be too far in advance of a commercial market. This led to glass lined brewery tanks, which are still a large business with our company. After glass lined brewery tanks came glass lined water heaters. The name Permaglas was then coined, and the facility at Kankakee was opened in 1946.

Today our research is going off into many new fields. We are building a $2-million laboratory at Middleton, Wis. This laboratory will emphasize long range research and will take advantage of the talents and laboratories available at the University of Wisconsin.

We also have an interest in a West Coast research corporation which is working in the theoretical and far-reaching fields of electronics and communications. Although we have always maintained extensive laboratory facilities in Milwaukee, with all of our products based on this research effort, we are now branching into new fields of research beyond our everyday product development work which goes on continually.

AS TOP MANAGEMENT SEES IT

MILTON E. MORGAN .... *vice president and general manager*

THERE ARE SOME IN THE INDUSTRY who are so troubled by the past, they have had little time to think clearly about the future. As a pioneer and leader in the production of domestic and commercial water heaters, the Permaglas Division of A. O. Smith Corporation has maintained a program of optimistic planning.

The result is reflected in production. After years of research, the first successful method of fusing pure thin glass to steel by A. O. Smith, was accomplished in the 1920's. This was followed by the development of the glass-lined water heater which is known as Permaglas today. In 1946 when the Kankakee plant was opened, our production was 22,000 water heaters a month. This volume rose rapidly to 60,000 units a month, and now our combined facilities have a total production capacity of more than 70,000 water heaters every 30 days.

This continuing expansion is indicative of what we expect in the years ahead. In every phase of our Permaglas operations, plans have been projected with utmost confidence in the future, and we expect Permaglas products, along with the entire industry, to move ahead to new records during the 1960's.

M. MILLER .... *assistant vice president*

THERE IS MORE TO AUTOMATION and production efficiency than cold, inanimate machinery and electronic circuits. Despite the implied exclusion of much manpower in automation, it is the human element that still makes production efficient.

One of the highest compliments any visitor to our Permaglas plant can pay us is to remark on the pleasantness and spirit of cooperation of our shop men. When a plant is visited by thousands of people every year, this attitude cannot be contrived each and every time. It has to be genuine.

We believe our people are dedicated to quality and this is perfectly keynoted by a large sign at the end of the final assembly line, which cautions: "The next inspector is the customer."

MPM PHOTOS

W. T. HALKET .... *director of marketing*

IT IS INSPIRING TO A MARKETING MAN to know that he is selling a product bulwarked by the vast research and production facilities of A. O. Smith Corporation. This confidence in product is marked by nearly 6,000,000 domestic A. O. Smith glass-lined water heater installations.

We recognize formidable competition and at the same time a quality-conscious public, and we know that there are countless opportunities for many new markets in domestic water heaters, commercial heaters, hydronic boilers, and water softeners.

Armed with the highest quality and products geared to meet the challenge of efficiency and cost, we have embarked on one of the most aggressive promotional and merchandising programs in Permaglas history.

We are sure this program will further identify the A. O. Smith and Permaglas leadership image and will accelerate the symbol of quality as the first and lasting obligation to a demanding public.

Final assembly line for automatic water softeners. Here the tanks are equipped with their six-port valves, pre-assembled time drives, and control knobs. Operator in foreground is hooking up hose for blowing gravel and ion-exchange mineral into tank.

water softeners

"... WE CAN SEE THE TIME WHEN WATER CONDITIONING WILL BECOME AN ESSENTIAL AND INTEGRATED HOUSEHOLD OPERATION IN THE WAY THAT WATER HEATERS AND HEATING PLANTS ARE TODAY."

(Below) — Following preliminary tank fabrication, which includes tank forming and head welding, tank interior is lined with a high-bake phenolic resin coating. Tank (in center background) rotates on power-driven rollers as spray arm travels length of tank interior. Two coats are applied — the first is baked at 350°F.; the second at 450°F. (Above) — Closeup of spray arm in tank.

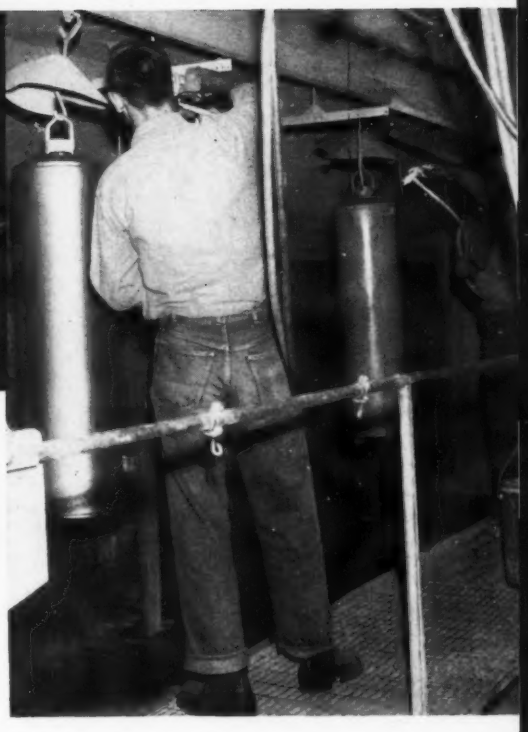
THE PERMAGLAS DIV. is probably best known in the home and commercial appliance field for its line of domestic water heaters. In the past few years, however, the water heaters' "associates" have grown in stature.

A good example is the division's line of water softeners. Permaglas entered this field in 1958 with the acquisition of the Refinite Corp. Since then, major efforts have been devoted to moving and consolidating facilities at Kankakee and re-engineering the product. Today three types of softeners are produced — automatic, semi-automatic and manual, plus a full line of water conditioners.

From initial tank fabricating to final assembly operations, water softener production is characterized by precise manufacturing techniques and rigid quality control standards. Controls, timers and drives are individually assembled and tested. Tank interiors are lined with two coats of a high-bake phenolic resin specially suited for the requirements of water softeners.

Highlight of the quality control program is a final and thorough operational test of every water softener. A special test station was devised for this purpose. The unit is run through its normal cycle to check the function of valve parts, timers and controls. Also, air pressure is employed for leak detection.

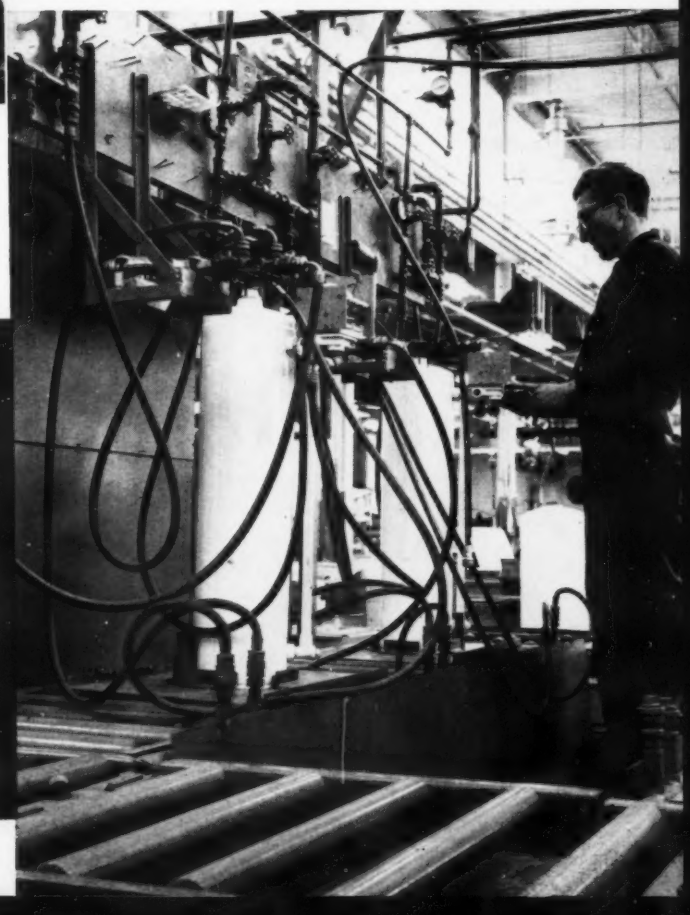
(Above) — Base is submerged arc welded to tank after interior is coated. Tank exterior is then grit blasted prior to painting. Pipe fittings are added, and unit is pressure tested.



(Right) — Tank exteriors are hand sprayed with two coats of an epoxy-type finish. Gray primer (being applied at left) and white finish coat (right) are applied in same booth. The two coats are baked simultaneously at 350°F. After baking, the tanks are placed on a level platform and a sealant is poured around the inside bottom edge to coat the area where the inner coating was removed in the welding operation.

(Above) — One of the major sub-assemblies involved in water softener production is the gear assembly which drives the valve system for the timed regeneration cycle. Operator is assembling gear train on bench. Three completed gear boxes are being tested under power at top of picture.

(Below) — Overall view of control assembly area. Operator in foreground assembles gear train to calendar clock. At extreme right is test equipment for checking torque output of the completed unit. Gear train assembly area is in background.

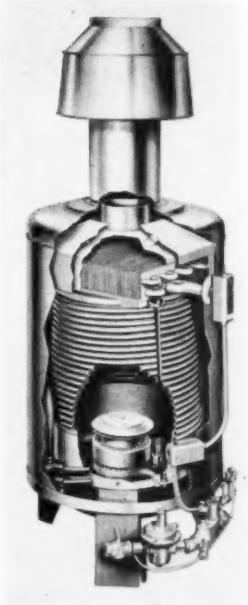


All completed water softeners receive a thorough operational check. The test includes valve operation and inspection for leaks. Both water and air are used — the water employed mostly for operational checks. Air pressure is effective in locating leaks. Unit in foreground is "on test," while inspector prepares second unit.

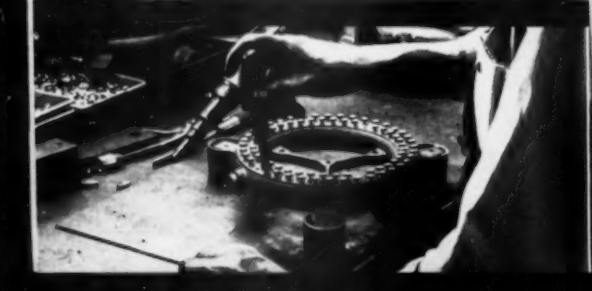
BURKAY COMMERCIAL water heaters have been the leading growth item in the Permaglas line — sales in fiscal 1960 were up twenty percent; fiscal 1959 sales topped the previous year by 40 percent.

Production of domestic hydronic heating systems, another stable member of the Permaglas family, also rose in 1960.

Production methods and equipment utilized in the manufacture of these two products differ markedly from many phases of water softener and water heater production. The major components in the commercial water heater and the boiler which set these products apart from the rest of the Permaglas line are the copper coil combustion chamber and the heat exchanger.



commercial water he



(Left, from top) — Copper fin-and-tube heat exchangers are individually assembled to suit various Burkay models. Fins are placed over U-shaped sections of copper tubing and driven into place with a mechancial press. Spacers are inserted between the fins for proper flue passage. When all fins are assembled the top tube bends are slipped on, creating a continuous length of copper tubing.

Assembled heat exchanger is mounted in jig and tube bends are brazed to tubing. Bronze castings are then brazed to the inlet and discharge ends of the heat exchanger.

Following brazing, the heat exchanger undergoes acid treating and lead coating. The unit is first dipped in a muriatic acid bath to remove dirt and grease, and then transferred to a lead pot heated to 875°F. Following a two-minute immersion in the lead bath, the heat exchanger is removed with a mechanical hand and swinging arm (pictured) and transferred to a spinning fixture, where the excess lead is removed. The lead coating seals all connections and protects the heat exchanger from products of combustion. The unit is under a pressure of 20 psi during this treatment.

Orifices being assembled into bottom ring of commercial water heater burner. Raw castings purchased for the burners are annealed, machined, and assembled into the complete burner unit. Burners are designed specifically for the type and specific gravity of gas found in the area where the heaters are to be sold.

(Below) — Two or more lengths of copper tubing are wound tightly around a pattern spindle to form the Burkay's water-wall combustion chamber. Next the tubing is soldered to hold the coils together permanently. When heater is in operation, water is circulated through the parallel coils to take advantage of all available radiant heat. The use of parallel coils also reduces pressure drop.

er heaters

"LAST YEAR BURKAY EXPERIENCED ABOUT A 20-PER-CENT INCREASE IN SALES. THE GREATEST GROWTH IN COMMERCIAL WATER HEATER USAGE IS COMING FROM AUTOMATIC SELF-SERVICE LAUNDRIES."

...and domestic hydronic heating systems

(Above) — Burkay commercial water heaters in the final stages of assembly.

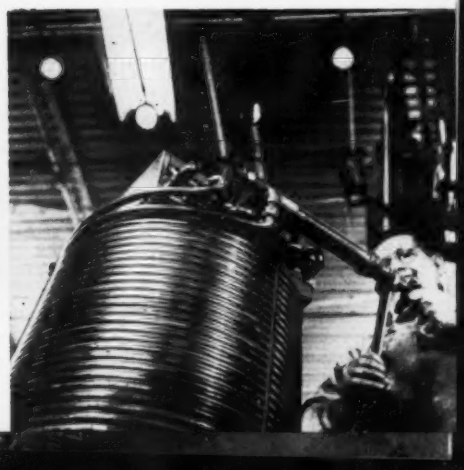
Heat exchanger (being lowered to coil at right) is connected to coppercoil combustion chamber with unions for ease of replacement in the field.

Assembled coil and heat exchanger are pressure tested with water at 500 psi. When pressure tests are completed final assembly begins, including addition of burner and control assemblies and the jacket and exterior components.

HYDRONIC HEATING SYSTEMS

Burner for gas-fired boiler is flame tested following assembly. Several castings make up each burner assembly. When the test is completed, controls and accessories, including manual gas shut-off valve, pressure regulator, automatic gas valve, pilot burner assembly and main burner supply tube are added to form a single control string.

Water-wall combustion chamber for the boiler is constructed in much the same manner as the unit for the commercial water heater. Operator sets up airline for pressure test at 500 psi.



Permaglas water heaters

"NEW PROCESS ADV
TECHNIQUES H VIDE
CONSIDERABLY VALU
PRODUCT THAN AVAIL

(Right) – In o the
glas Divisio ns an
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THE KANKAKEE PLANT of A. O. Smith was dedicated in 1946. Its production capacity was quoted at approximately 20,000 per month. On October 8, 1959, the five millionth water heater moved off the assembly line and today the production total is rapidly approaching the six million mark. Production capacity of this mainstay in the Permaglas line has tripled.

This startling climb in production has been accomplished through a combination of experienced personnel, new and modernized equipment and manufacturing efficiency. On the following pages are the operating results.

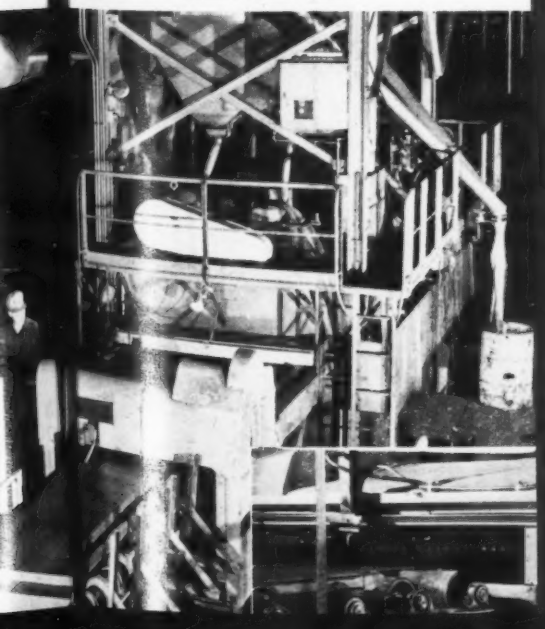
metal preparation

A NORMAL INVENTORY of six to eight thousand tons of sheet steel and pipe for center flues in water heaters is maintained at the Permaglas plant. This tonnage represents approximately a six-weeks supply for the manufacture of Permaglas products *(including Harvestore production, which was described in the August 1960 issue of MPM.)*. Sixty 16-ton truckloads of steel arrive at the plant weekly. Incoming stock is checked for gauge, dimension, hardness and carbon content.

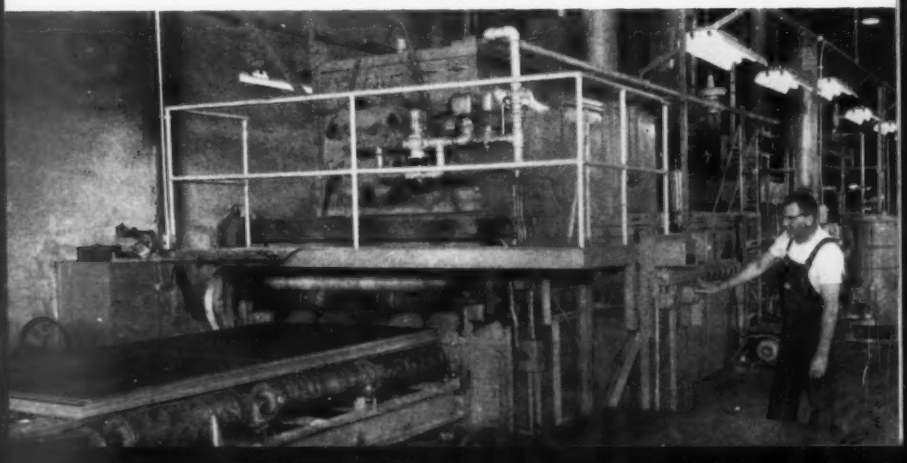
ADVANCED MANUFACTURING
VIDED THE CONSUMER WITH
VALUE AND A LESS-COSTLY
AVAILABLE TEN YEARS AGO."

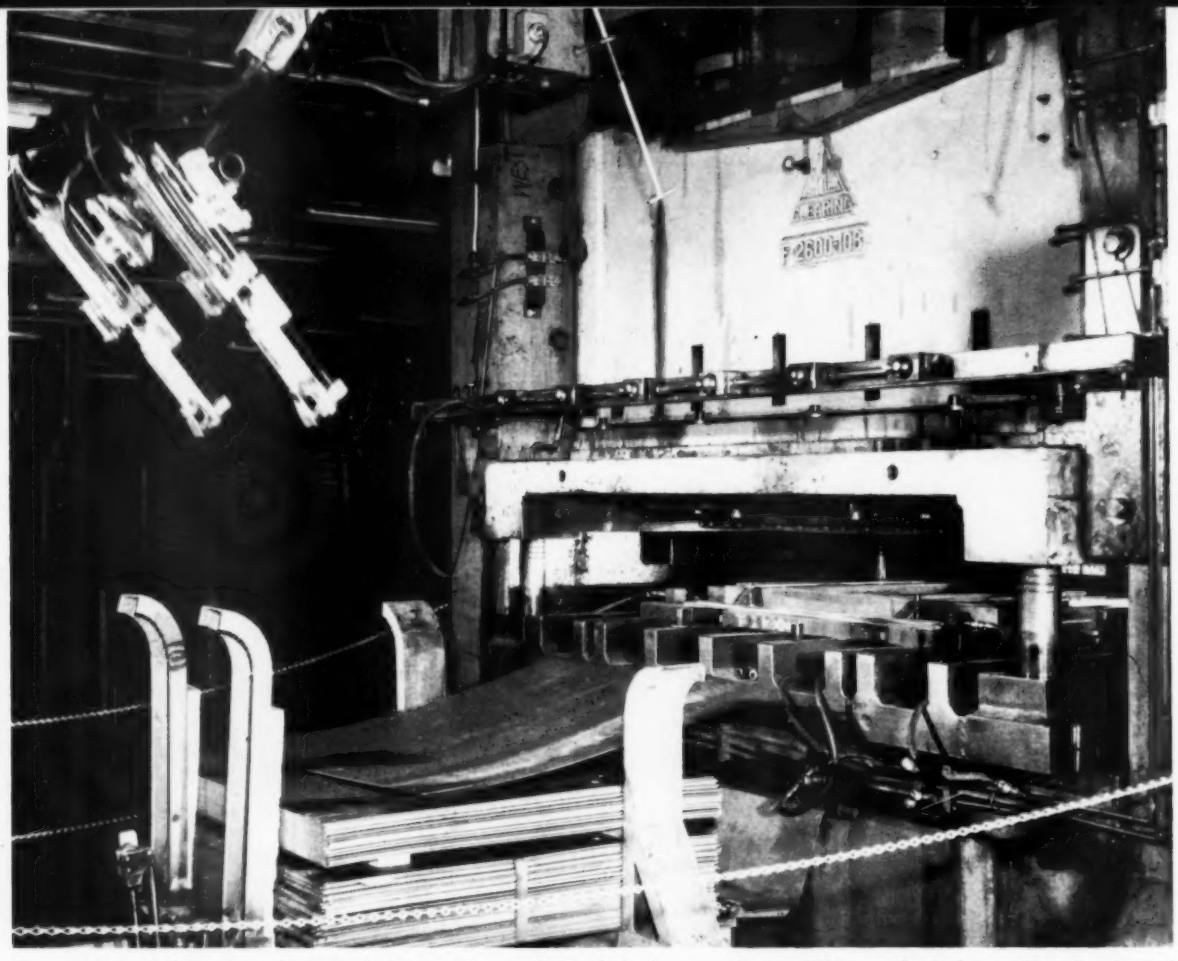
t) — In ... to the three million parts purchased monthly, the Perma-
Divisio... ...ns an inventory of six to eight thousand tons of sheet
and flu... This tonnage represents approximately a six-week supply
he plan... ...n storage area is handled with 10-ton overhead crane.
e load... ...motorized roller conveyor which feeds shot blast unit.

ow) — M... ...ader (see inset) separates sheets and feeds them indi-
ally int... ...t equipment. The blasting operation removes mill scale
also pr... ...moderate etch. Centrifugal wheels in the blaster can be
...djusted to suit various stock widths.



(Below) — Following shot blasting the sheets are restacked and either sent to production areas or coated with a dry drawing compound in this coating machine. The compound application is a two-stage operation: Washing is accomplished with a hot-water spray followed by a gas fired dry-off. The drawing compound then is applied with 12 spray guns — six mounted above the sheet and six below. The spraying equipment incorporates an automatic purging system for periodic cleaning. The volume of drawing compound feeding to each gun is individually controlled by flow meters.





First major step in fabrication of inner tanks is trimming, squaring and piercing operation on 600-ton mechanical press. Note "mechanical hand" for press unloading.

fabrication

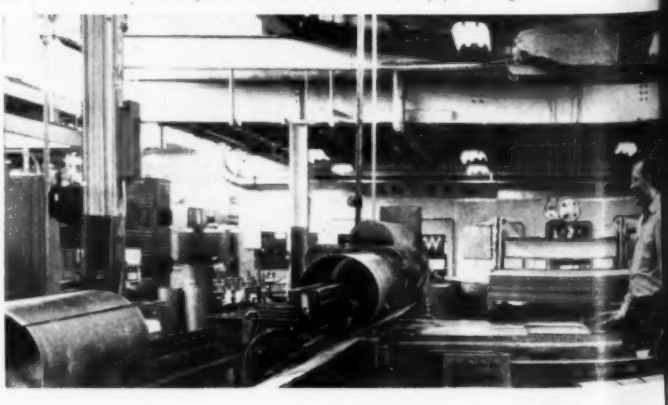
EQUIPMENT USED IN THE FABRICATION STAGES of water heater production includes a variety of presses and roll forming and welding equipment.

Inner tank sheets are trimmed, squared and pierced on a 600-ton press equipped for automatic unloading. The sheets are roll formed and the vertical seams are flash welded. The welded area is ground smooth, pipe fittings are spud-welded to the tank, and the tank ends are flared. The head is press fitted to the tank and CO_2 welded. A leak test at 300 psi makes certain all welds are sound. *(See "Quality Control")*

Water heater outer jackets, after preliminary trimming and piercing, are processed in a hydraulically operated C-frame punching unit. The sheets are then roll formed in a recently installed automated roll forming unit. In some cases the jackets require further fabrication; otherwise, pre-paint treatment is the next step.

Other water heater components which are fabricated in the plant include Heet skirt rings, doors, flue hoods and flue collars.

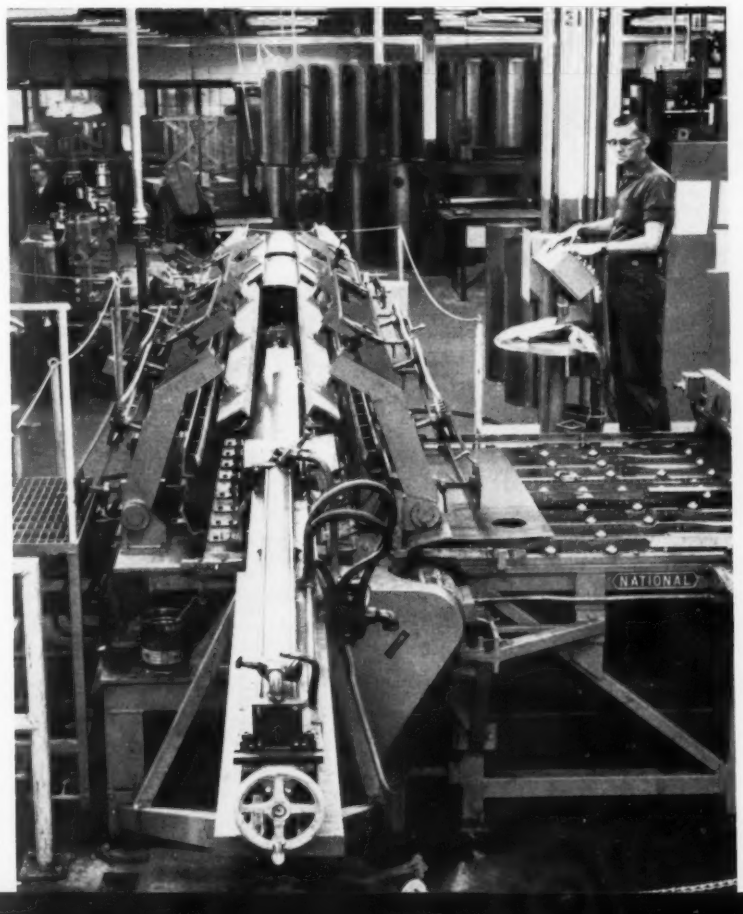
Next step in inner tank fabrication is roll forming in true-circle roll. Tanks roll by gravity to a station where the vertical seams are flash welded. The welder uses a steel shoe to encase the tank and butt the two edges together until the seam weld is completed. The welded seams are then ground and an automatic tilting device stands the tank on end to dispose of the weld slag. A belt polisher further smooths the inside welded area and a resistance spud welder is used to weld pipe fittings.



Preceding welding of the top head to the fabricated tank, an expanding device flares both ends of the tank. The tank head is then pressed on the tank and the head is girth welded to the tank in the CO_2 welding unit (pictured). Each tank is then given a hydrostatic test. The tank is filled with water and put under 300 pounds pressure. The vertical seam is struck several times with a hard rubber hammer to dislodge any slag which may have been deposited during welding. In addition, the head weld is visually inspected. Faulty tanks are then repaired and re-tested.

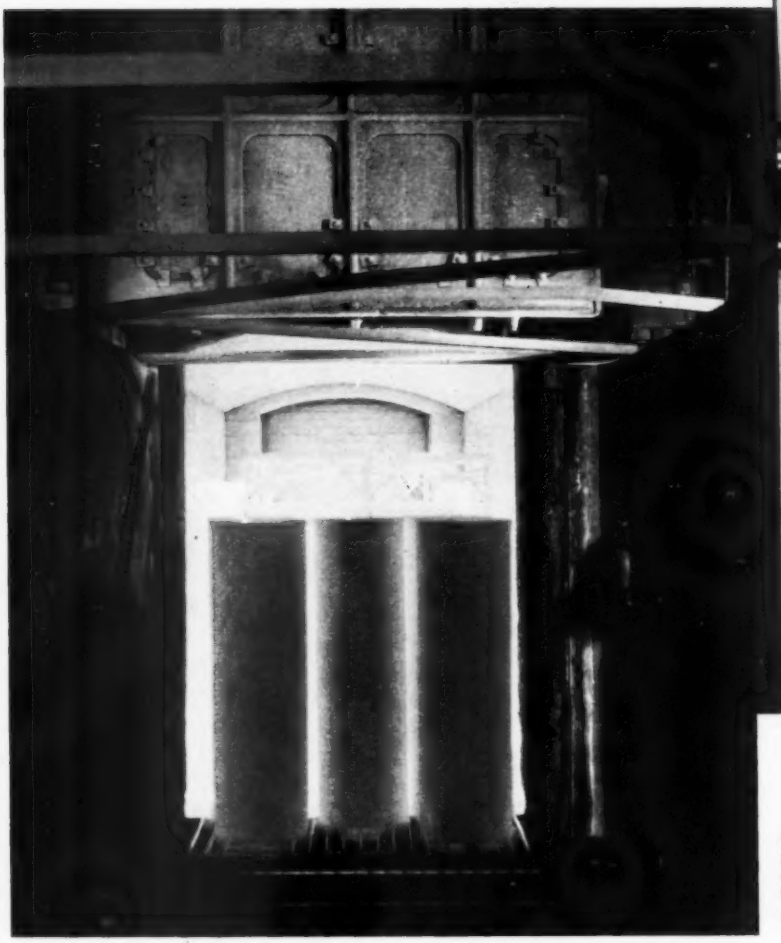
Sheets for outer jackets of water heaters are processed in hydraulically operated "pool table" C-frame punching unit. This equipment punches door openings, screw holes, holes for "Permaglas" emblem, and other multiple small holes.

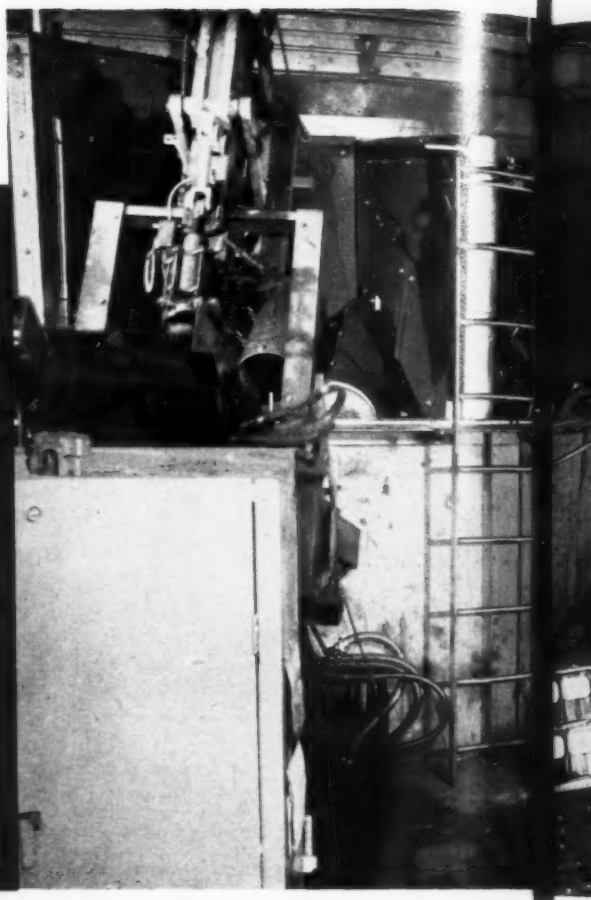
One of the newest equipment installations in the Kankakee plant is this automated line for roll forming outer jackets. A stack of sheets measuring 52 x 52½ inches is placed on a loading table at right (not visible), and the sheets are individually placed in feeding rolls by suction-cup lifting devices. A squaring station precedes the five-stage forming and lock-seaming sequence (center), which includes: roll forming, locking edge forming, locking edge hooking, mash seam locking, and top and bottom circumference crimping.



Flame spreaders for gas water heaters are stamped and formed from 2000-foot coils of .031-inch stainless steel, one of many small press fabricating operations.

ceramic finishing





(Left) — Glass-coated inner tanks move out of two-zone controlled-atmosphere furnace. First stage oxidizes the steel at 1080° F. for 15 minutes. Tanks are then automatically indexed into the oxygen-free second zone, where the ware is fired at 1600° F. for 15 minutes.

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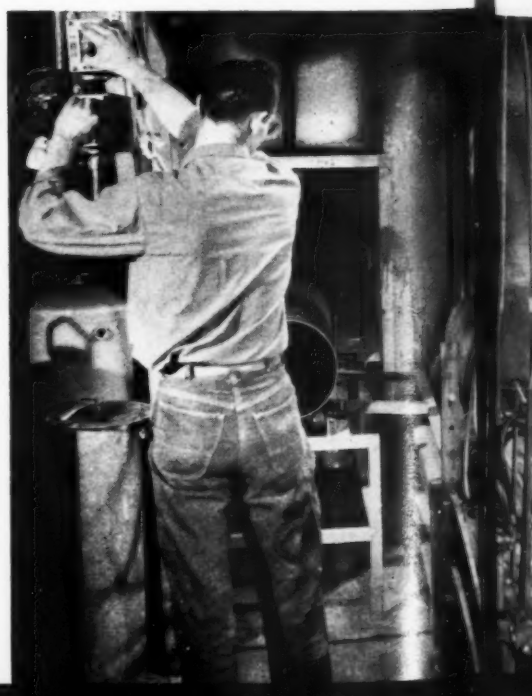
THE ELABORATE GLASS COATING FACILITIES for water heater tanks are "led" by an automatic grit blasting unit, designated "the octopus" by plant personnel. The unit, which is operated from a central control console, blasts 220 tanks per hour.

Following blasting, the tanks receive a nickelous oxide precoat, which is dried. The tanks are then conveyod to a second set of twin automatic spray booths, where an especially formulated blue coat is applied and dried in an overhead oven.

Two controlled-atmosphere furnaces are used for firing. They both have two zones. In the first zone (oxidizing), the tanks are heated to 1050° F. for approximately 15 minutes. The ware then automatically indexes into the second zone, where the finish is fired at 1600° F. for 15 minutes. The latter zone is oxygen-free. A. O. Smith terms this complete glass-lining procedure the "Hydrasteel" process.

Bisque thickness is checked every 20 minutes to make certain the thickness is being held to the 14 to 15 mils required for a fired thickness of ten mils. In addition, the finished ware is given a 100 percent visual inspection with the aid of a probe light.

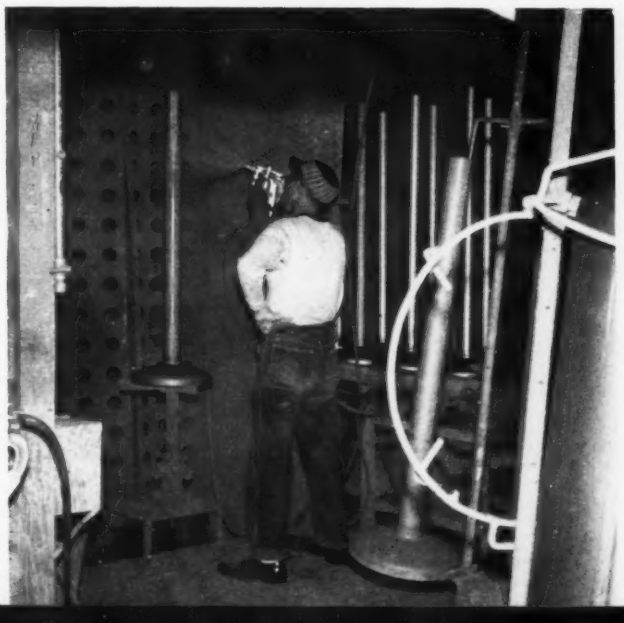


(Above) — "Octopus" used for shot blasting inner tanks prior to glass coating is fed from overhead conveyor. Tanks are washed in a 180° F. alkali cleaner before blasting. They are loaded into blaster with arm at left and unloaded with arm at right. The unit has 10 stages, 8 of which are blasting stages — the remaining two for loading and unloading. Tanks are blasted as they follow a circular path past the 8 blasting stations. The stations blast simultaneously as the tanks index, each station blasting a different section of the tank interior or exterior. The "octopus" is operated from central control console in foreground.

One of two mill rooms in the Kankakee plant. Note overhead storage tanks and provision for overhead loading of mills. The high-set slip is unloaded from mills by gravity and air pressure. The material is pumped through a centrifugal sieve and magnetic separator into an open tank, and to an overhead storage.

(Left) — Following blasting, the tanks receive a nickelous oxide precoat, which is dried. The tanks are then conveyed to a second set of twin automatic spray booths, where an especially formulated blue coat is applied and dried in an overhead oven. Ware then proceeds to one of the two controlled atmosphere firing furnaces.

(Below) — Glass coating is hand sprayed on flue bodies. After spraying, operator transfers flues to overhead conveyor (right). Following drying, bottom head is brushed back for welding. Firing is on same furnaces with tanks.



This hand-spray booth for jacket cover coats is preceded by electrostatic spray booth for prime coat. After a 35-second flashoff period between prime and cover coat, the two coats are baked together. Both are high-alkyd melamine-type coatings. Baking for approximately 12 minutes at 330° F. results in a total paint thickness of 1.5 mils.

organic finishing

WATER HEATER PAINT FINISHING OPERATIONS consist of a combination of hand spraying, electrostatic spraying, and dipping.

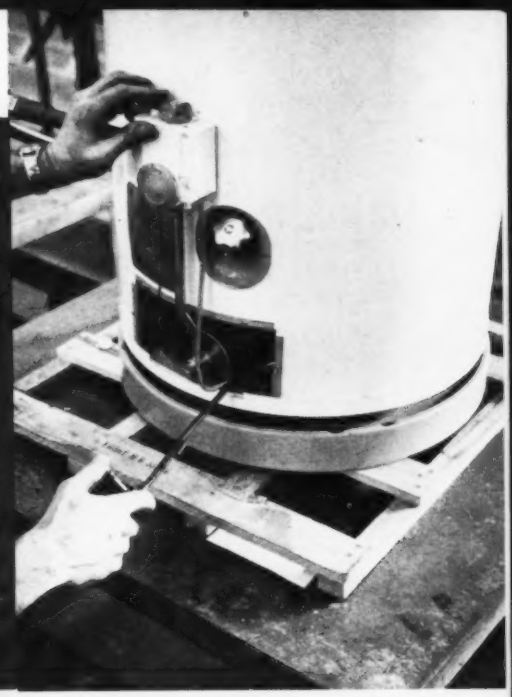
All parts which are to be painted are given a five-stage cleaning and phosphatizing treatment consisting of a 180° F. alkali cleaner; an overflow water rinse at 160° F.; 160° F. phosphatizing, with solution held at 8-10 mils acid titration; cold water overflow rinse; and a dilute chromic acid bath.

Exterior parts, including the jacket, head and base, are finished in hand spray rooms with a high-bake enamel. Prime coats are applied to jackets electrostatically, while both coats are hand sprayed on smaller exterior parts.

The finish coat spray room is manned by three operators. The room has a complete oil-bath filtering system and is pressurized. Painted ware is baked in a three-pass oven for approximately 12 minutes. Thickness of the baked finish is approximately 1.5 mils.

Interior water heater parts, such as door frames, thermostat brackets, junction housings and other miscellaneous parts are dipped once in the same enamel used on exterior components. The dipped ware is baked in a separate oven at 425° F. for 20 minutes.

Conveyor in background-right carries ware from bake oven (behind conveyor). A second conveyor (not visible) brings other components. Parts from these two conveyors are transferred to conveyor (foreground) leading to assembly line. Groups of parts are hung on this conveyor to form complete "sets" of water heater painted parts.



Important quality control measure on assembly line is 100 percent flame test of burners.

(Left) — "Customer inspection" phase of water heater quality control is carried out by selecting units at random from the assembly line, connecting them to water and gas, and subjecting them to complete "home" tests. Included in the checks are water temperature, burning rate, operation of the pilot pull rod, and leak detection.

In addition to the operational checks made in customer inspection," the heaters are given a complete appearance inspection. Each defect, whether operational or visual, has a numerical rating or "demerit" value, which is recorded on a report form. Functional defects are reported promptly to manufacturing supervision. Visual check of unit pictured revealed two surface scratches (marked) which have been noted on inspection report form in foreground.

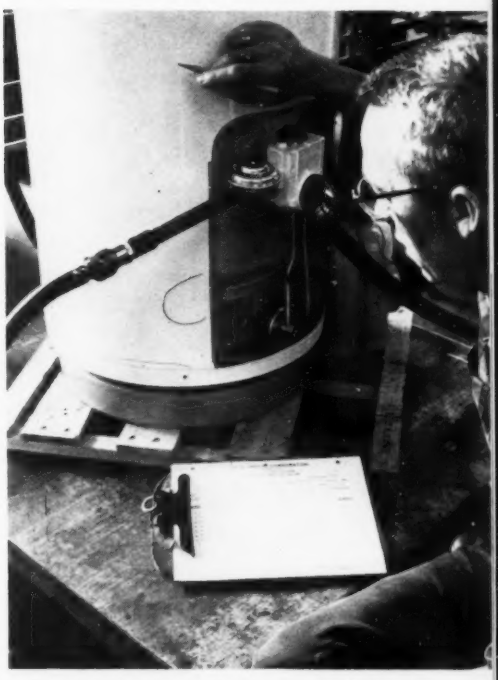
quality control

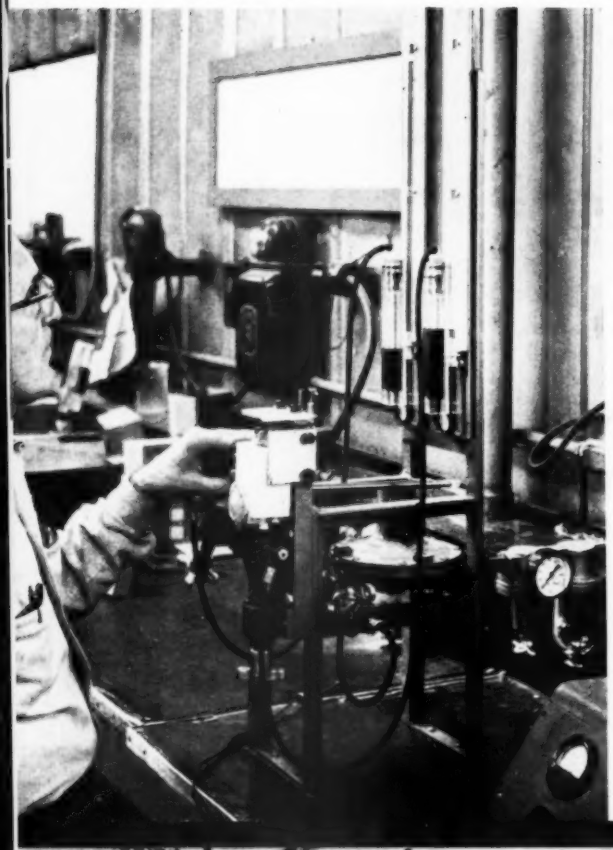
THE QUALITY CONTROL SYSTEM for Permaglas water heaters is divided into four main functions: tests in various phases of production, thorough "customer use" test of completed units; laboratory checks of purchased components; and "safe transit" testing of packaged products selected at random.

There are three 100 percent inspections of the water heater tanks. The first check is made after roll forming and seaming — a hydrostatic leak test. The second takes place following glass coating and the welding of the lower head into the tank. This is a water bath test with the tank under approximately 50 psi. The final 100 percent test on the inner tank is made on the assembly line. Approximately 35 psi of air pressure is put in the tank. The air is allowed to "settle," and an accurate pressure reading is taken with a mercury column. This pressure is marked on the tank. Near the end of the assembly line another reading is taken and compared with the original. A drop in pressure indicates a leak.

The plant's quality control lab is responsible for quality control of purchased components, including thermostats, gas valves, regulators, room thermostats, time clocks, and drain valves.

"Customer use" tests are conducted by selecting finished heaters at random from the assembly line, connecting them to water and gas, and operating them just as they will be used in the customer's home.

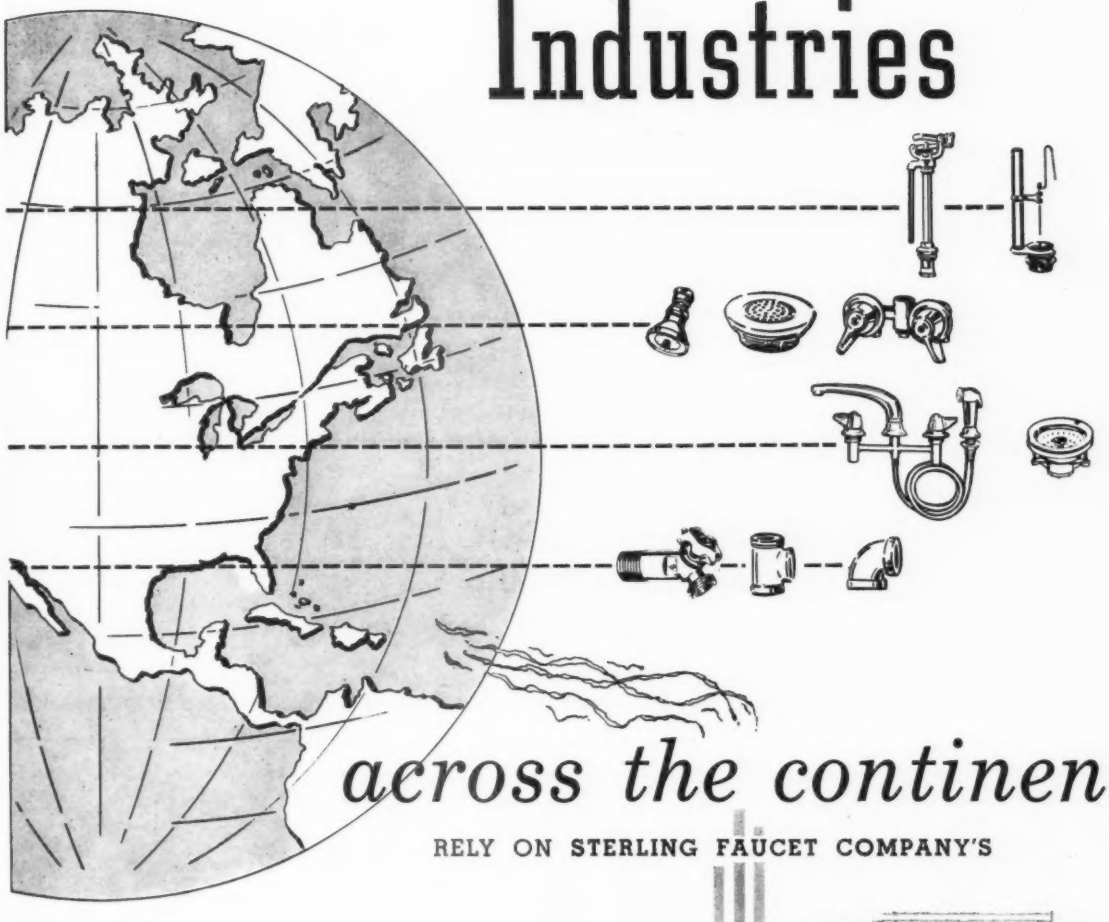




(Left) Quality control lab for purchased parts is responsible for quality analysis of components such as thermostats, gas valves, regulators, time clocks, drain valves, etc. Pictured is a pressure regulating device used for checking the pressure characteristics of water heater control.

(Right) Technician checks calibration, temperature differential and magnet dropout of gas water heater controls. Tank holds water which is maintained at 130° F. by temperature controller in background.

Industries



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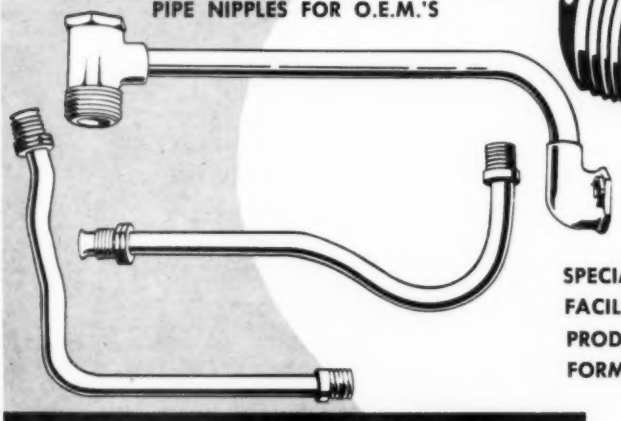

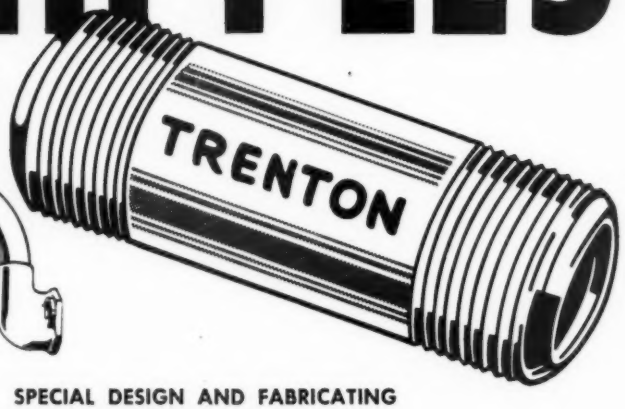

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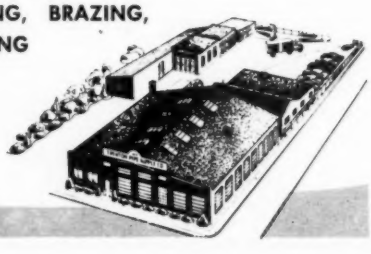

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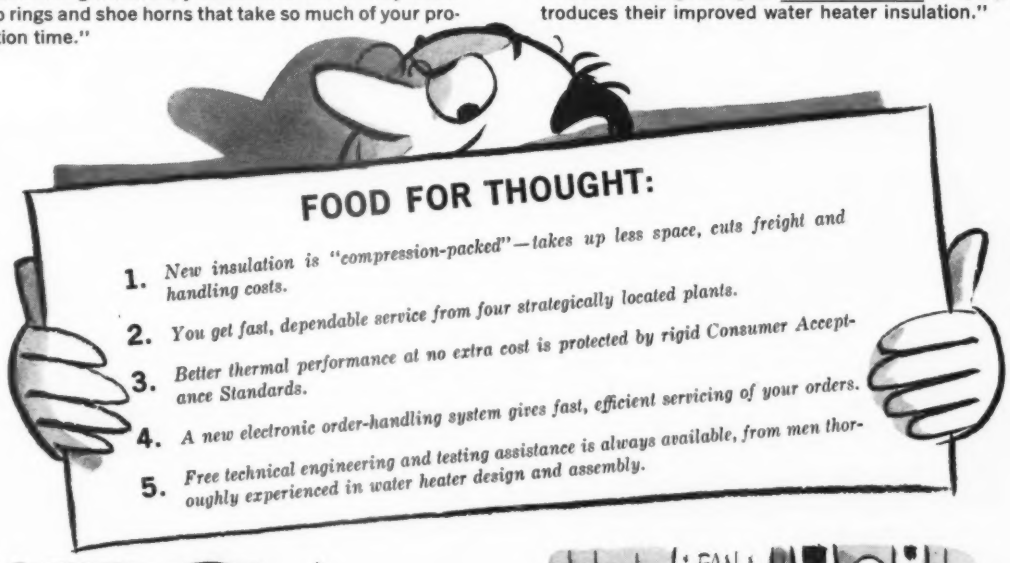
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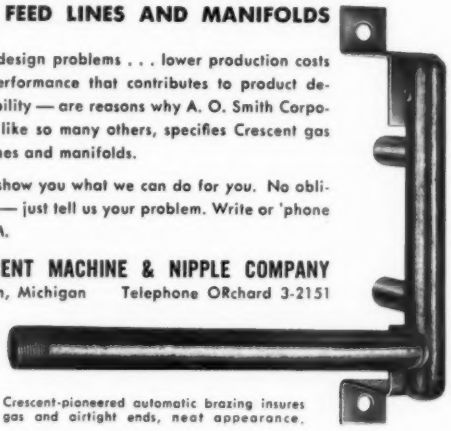

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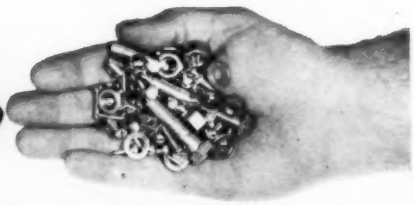

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PLASTICS
The 16th Reinforced Plastics Division Conference, Edgewater Beach Hotel, Chicago, Ill., February 7-9, 1961.

HEATING, REFRIGERATION
The American Society of Heating, Refrigerating & Air-Conditioning Engineers' Semiannual Meeting, Conrad Hilton Hotel, and Exposition, International Amphitheatre, Chicago, February 13-16, 1961.

METALS EXPOSITION
The 12th Western Metal Congress and Exposition, Ambassador Hotel (technical sessions) and Pan-Pacific Auditorium (exhibits), Los Angeles, Calif., March 20-24, 1961.

PRESSED METAL
Pressed Metal Institute's 1961 Spring Technical Meeting, New York City, N. Y., March 22-24, 1961.

ARCHITECTURAL METAL
The 23rd Annual Convention of the National Association of Architectural Metal Manufacturers, Plaza Hotel, New York City, April 9-15, 1961.

GAS APPLIANCES
The Gas Appliance Manufacturers' Association's Annual Meeting, Boca Raton Hotel and Club, Boca Raton, Fla., April 13-15, 1961.

HOME LAUNDRY
The American Home Laundry Manufacturers' Association's 1961 Convention, Boca Raton Hotel and Club, Boca Raton, Fla., April 16-18, 1961.

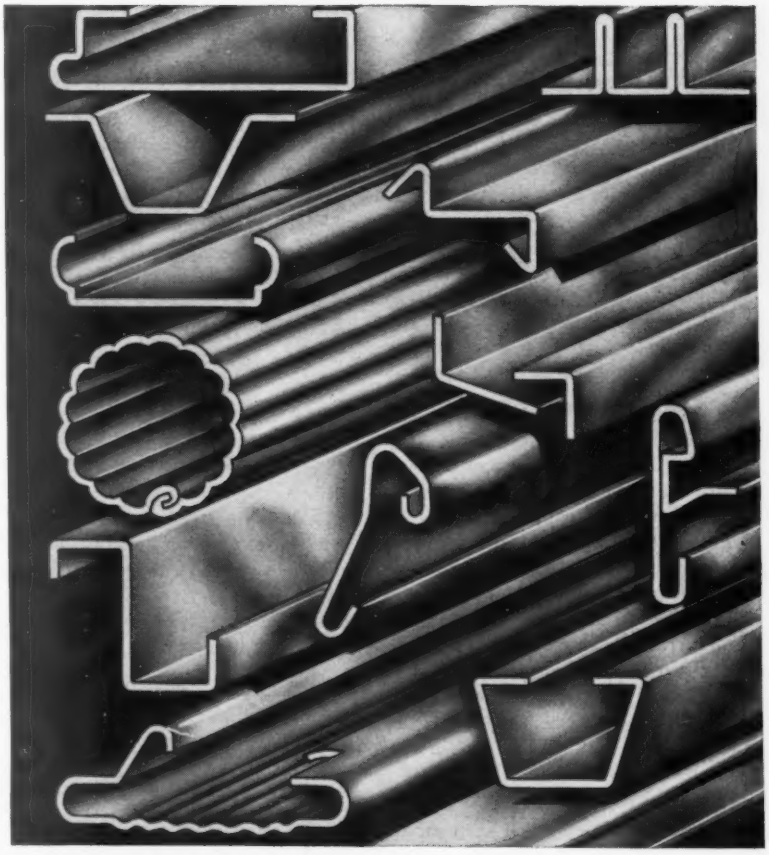
WELDING EXPOSITION
The American Welding Society's Annual Welding Exposition, Coliseum, New York, April 18-20, 1961.

SECTIONAL

METALWORKING MARKETING
Chicago Chapter of the Association of Industrial Advertisers' One-day Seminar on Metalworking Marketing, Designed for Metalworking Executives (top management, sales and advertising), Drake Hotel, Chicago, February 13, 1961.

GAS APPLIANCES
The Gas Appliance Engineers' Society (Midwest Chapter) Meeting, Mickleberry Restaurant, Route 30, Chicago Heights, Ill., March 8, 1961.

MONEY SAVERS...



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Ely Named AHLMA Chairman

Claire Ely, vice president, marketing, The Maytag Co., has been elected chairman of the board of the American Home Laundry Manufacturers Association for 1961.

Fred H. Holt, general manager, home laundry department, General Electric Co., was elected vice chairman. Mason Smith, financial vice president, Whirlpool Corp., was elected treasurer. Ely replaces Homer L. Travis, vice president, Kelvinator Sales, American Motors Corp., who has served as board chairman the last two years. Guenther Baumgart continues as president and chief executive officer.

NALCC Names Committee

The National Automatic Laundry and Cleaning Council has announced members of the group's executive committee. In addition to Chairman H. J. Mitchell of Philco, the committee includes Spencer N. Rich, Norge Sales Corp., vice chairman and treasurer; Monte Huebsch, Jr., Huebsch Mfg. Co., secretary; T. W. Bruner, Bruner Corp.; John B. Lanagan, Standard Change-Makers, Inc.; Peter E. Nehemkis, Jr., Whirlpool Corp.; L. W. Roye, A. O. Smith Corp., and Charles J. Vondran, Westinghouse Electric Corp.

The organization was formed by manufacturers of coin-operated laundry and related equipment "to maintain high safety, health and other standards in automatic laundries."

Electric Heat Officers Named

Stanley B. Aronson, sales manager, Berko Electric Mfg. Co., has been elected chairman of the Electric House Heating Equipment Section of the National Electrical Manufacturers Association.

In accepting the position, Aronson said that plans were progressing satisfactorily for the section's second National Electric House Heating Symposium and Exposition. The event will be held March 19-21, 1962, in the Sherman Hotel, Chicago.

Kelvinator Names Licensee

Kelvinator International Corp., subsidiary of American Motors Corp., has announced the licensing of an Italian firm to manufacture household and commercial refrigeration equipment.

Kelvinator Italiana, S.p.A., located at Milan, is already manufacturing products for distribution in Italy and for export to the Middle East, South Africa, Common Market countries and other European markets, according to G. T. Etheridge, vice president of Kelvinator International.

Telecontrol Firm Formed

A new company, Hancock Telecontrol Corp., has acquired the Telecontrol Div. of Hancock Industries, Inc., Jackson, Mich. The firm will manufacture and market "Telecontrol" production-data equipment.

Named to head the new firm is Charles J. Lawson, Jr., former director of manufacturing services, International Business Machines Corp.

12th Western Metal Congress

More than 200 exhibiting firms and 32 important technical sessions will introduce new metalworking ideas and developments March 20-24 at the 12th Western Metal Congress and Exposition in Los Angeles.

Exhibits will be staged in Pan-Pacific Auditorium and adjacent pavilion. Technical sessions in Ambassador Hotel will by presented by the sponsoring American Society for Metals and six other prominent engineering organizations.

Muntz to Build $1 Million Plant

Muntz TV, Inc., has announced plans to build a $1 million plant in the 70-acre Seeburg Industrial park near Wheeling, Ill.

The plant will be a one-story, 35,000-sq.-ft. structure to house the company's offices as well as manufacturing operations. The structure will be leased to Muntz by N. Marshall Seeburg & Sons.

Welding Show Set for April

The Annual Welding Exposition sponsored by the American Welding Society will be held April 18-20 in the New York Coliseum. Welding equipment, materials and related products will be exhibited.

A technical meeting will be held concurrently at the Commodore Hotel. The Society will sponsor 22 technical sessions consisting of 65 papers.

Certification Program Approved

Manufacturers of room air conditioners, through their section in the National Electrical Manufacturers Association, will launch a voluntary certification program under which they will certify the cooling and/or heating performance of their products to purchasers. The program will start with 1962 models.

The testing will be under the supervision of Electrical Testing Laboratories.

Westinghouse Introduces Coin-Operated Self-Service Drycleaner

Westinghouse coin-operated drycleaners soon will be in self-service laundry stores. While owners will set the coin meters in their stores, charges are expected to be about $1.50 for an eight-pound load. Westinghouse says this compares to approximately $6 to $7 at regular cleaners. The machine takes 45 minutes to do a load.

WATER HEATERS NEED A LITTLE GLAMOUR

That's why the new General Controls G-11 Water Heater Control. It beautifies. And it has capacity beyond the toughest load requirements, plus a built-in front pressure regulator for full range adjustment.

The rugged G-11 comes in unlimited colors and trims. And like every General Controls water heater control, it offers economical interchangeability, universal pilot filters, and famous General Controls precision quality.

Find out how one of the complete line of General Controls water heater controls will glamorize your product...and your sales. Write for a new, full-color brochure today.

G-8
Stylish, deluxe—unlimited color combinations, choice of trim.

G-9
Same deluxe combinations as G-8 with pressure regulation.

G-10
Fashion Family competitive model with or without pressure regulation.

GENERAL CONTROLS

Automatic Controls for Product or Process

Glendale, Calif. · Skokie, Ill. · Guelph, Ontario, Canada

Nine Plants — 44 factory branch offices serving the United States, Canada and Western Europe

THE NEW

NRI CURRENCY CHANGER

NOTHING LIKE IT... The NRI Currency Changer is unique. Not only does it make change for coins and one dollar bills, but for five dollar bills as well! Rejecting slugs and counterfeits with electronic accuracy, it gives a complete range of change for genuine currency from a dime to five dollars.

By sparing valuable personnel for more profitable tasks, the Currency Changer saves you time and money. By indirectly stimulating impulse buying, it even **makes** money. And all this with speed, efficiency and complete dependability.

GET THE FULL DETAILS... Learn how the Currency Changer can solve **your** change-making problems. For an illustrated brochure write: National Rejectors, Inc., 5100 San Francisco Ave., St. Louis 15, Mo.

The only machine that makes change for $1.00 and $5.00 bills

Factories: St. Louis, Mo.
Hot Springs, Ark.
Buxtehude, Germany

Branch offices: Atlanta, Boston, Chicago, Cleveland, Dallas, Detroit, Hot Springs, Los Angeles, Miami, New York, Pittsburgh, Richmond, San Francisco, Seattle, Montreal and Toronto, Canada and Buxtehude, Germany

NRI
NATIONAL REJECTORS INC.

Inc., New York City. Testing of the various models will be conducted by both participating companies and ETL. An impartial administrator will be designated who will arrange for the various tests and be responsible for their accuracy.

Alside Reports Record Earnings

Alside, Inc., Akron, Ohio, has reported sales and earnings for the fiscal year ending September 30.

According to President Jerome J. Kaufman, sales totaled $23,041,045, compared with $19,674,534 in fiscal 1959. He added that net income after taxes rose about 33 percent to $1,602,537.

ABC Names Distributors

Twelve new distributors covering portions of 14 states have been franchised to distribute ABC home laundry appliances, according to E. P. Christian, manager of ABC-Leonard sales. ABC distributors now total 48.

New ASM Chapter

Chartering of Central Ontario Chapter, American Society for Metals, has been announced by Allan Ray Putnam, ASM managing director. It is the 115th chapter of the 42-year-old society. The new chapter will serve metalworking industry, science, education and research in an area centering upon Kitchener, London, and Woodstock, Ontario. It is the society's 13th Canadian chapter.

Chemetron Acquires Northwest

Chemetron Corp. has acquired Northwest Chemical Co., Detroit manufacturer of chemicals used in the metalworking industry. Northwest becomes part of the Chemical Products Div. of Chemetron. Northwest products include metal cleaners of immersion, electrolytic and spray types; acid addition agents; phosphate coatings; paint strippers; and other chemicals and compounds for conditioning ferrous and non-ferrous metals.

Rheem Gets Army Contract

Rheem Mfg. Co. has received a $2,800,000 order from the U. S. Army Quartermaster Corps for 55-gallon steel shipping containers. The containers will be made by Rheem plants at Houston and New Orleans for delivery during the first half of 1961.

New Pattern Mill at Alcoa

Aluminum Company of America has announced that it has in operation a new 300-ton pattern mill able to produce patterned sheet up to 62 inches wide.

The mill is designed to produce patterns by both coining and embossing. According to the company, architects, industrial designers and manufacturers are increasing their applications of patterned sheet in automobile trim, and household appliances, and as an aesthetic addition to interior and exterior motifs.

General Bearing Opens New Plant

General Bearing Co., Inc., recently opened a new factory in West Nyack, N. Y. The new facility increases General's production space over 2½ times and "will afford customers high new levels of service and greater speed in production and delivery."

Robertshaw Forms New Subsidiary

The Robertshaw-Fulton Controls Co. has formed a new subsidiary to manufacture automatic controls in Japan. The new subsidiary, to be known as Robertshaw Orient, Ltd., is the result of an agreement among Robertshaw-Fulton and a group of prominent Japanese interests.

Production by Robertshaw Orient will be centered in a building to be constructed in the Shinagawa-ku section of Tokyo. The plant will be geared to mass production of controls to fill the needs of the market in Japan and Southeast Asia, the Philippines, Formosa and Hong Kong.

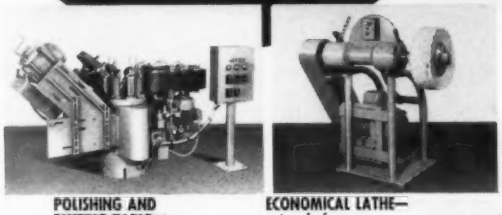
Fairmont Installs Rolling Mills

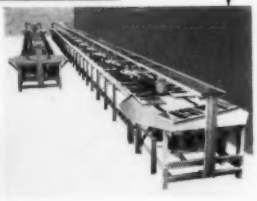
Fairmont Aluminum, which is undergoing a multi-million dollar expansion and modernization program, has begun installation of its new single-stand, 77-inch, four-high rolling mill, and two-

MURRAY-WAY SPECIALIZED FINISHING EQUIPMENT

JUNIOR FLAT POLISHER— versatile production unit for economically grinding, polishing, or deburring flat surfaces.

HORIZONTAL-PLATEN CONVEYOR built to fit your exact requirements.





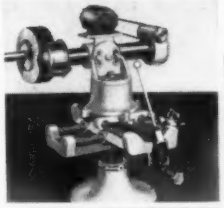
POLISHING AND BUFFING TABLE— small dial table has abrasive belt head and buffing head for spiral aluminum shapes

ECONOMICAL LATHE— stripped of many unnecessary "frills" to keep costs to a minimum.

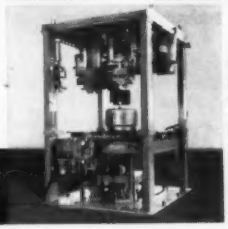
ROLLER COATER— a trouble-free, precision unit that coats one or both sides of a sheet.

...IMPROVES QUALITY, REDUCES COSTS FOR METAL PRODUCTS MANUFACTURERS

Polishing, buffing, grinding, filtering, deburring, materials handling . . . whatever your problem, Murray-Way equipment will do the job better and more economically. Fresh ideas based on a solid background of experience, enable Murray-Way's fine engineering and production departments to handle any and all of your production problems— large or small. The BETTER WAY is the MURRAY-WAY.



HAN-D-MATIC— low cost machine with interchangeable components for buffing, grinding, and deburring.



WIRE BRUSH MACHINE— deburrs automatic washer and dryer basket holes prior to painting.

MURRAY WAY

MURRAY-WAY CORPORATION
P.O. BOX 180 • MAPLE RD. EAST
BIRMINGHAM, MICH.

performance-tested porcelain enamel **FRITS**

Every batch of Hommel frits must pass the most exacting tests in the ceramic industry . . . giving you complete assurance of receiving the *highest quality* frits that can be produced. From raw materials to the finished product, check after check is made to maintain top quality production.

If you are not now among the many users of Hommel-Quality frits, you owe it to yourself . . . and to your company to try them. Run comparative tests and prove to yourself that you will be dollars ahead. Telephone today . . . contact your O. Hommel representative . . . or write for complete information.

THE O. HOMMEL CO.

PITTSBURGH 30, PA.

West Coast — 4747 E. 49th Street, Los Angeles, California

HOMMEL

DEPT. MPM-261

stand, 77-inch, four-high tandem mill. This machinery is part of an overall $10 million expansion.

The company, which is a subsidiary of Cerro Corp. (formerly Cerro de Pasco Corp.) is a major producer of flat and coiled sheet, circles, blanks and pattern sheet.

PPG Gains Division

Columbia-Southern Chemical Corp., a wholly owned subsidiary, has become a division of Pittsburgh Plate Glass Co. The new division operates under the name of Pittsburgh Plate Glass Co., Chemical Div.

Florida Industries Adds Division

Florida Industries, Inc., Tampa, has announced the formation of a Roll Form and Production Equipment Div. The new division is under the direction of Charles T. Frizell.

British Firm Organized

Controls Company of America, Schiller Park, Ill., has announced organization of Controls Company of America (U.K.) Ltd. to manufacture and sell heating and appliance controls in Great Britain.

A factory located in Woking, Surrey, has been purchased and operations are expected to begin during the first quarter of this year. The new company will be under the direction of D. A. O'Leary, who is also president of Controls Co.'s Canadian subsidiary.

Clearing Press Division Reports Good Export Business

At a combined press luncheon and plant demonstration held December 27 by the Clearing Div. of U. S. Industries, Inc., top executives of the Clearing Div. reported very good overseas export business — in spite of the talk of inroads by imported machine tools — and forecast one of the best years, business-wise, in the company's history for 1961.

Those who expressed opinions at the press luncheon included John R. Bartizal, president; E. P. Cunningham, vice president-international operations; E. J. Baumrucker, vice president domestic sales; and T. O. Thomas, manager foreign sales.

Cunningham reported that foreign branches had a 22-month backlog, and that this is now being reflected in domestic business. A case in point was a line including a 1,000-ton, double-action press and four single-action presses being built at the Clearing Chicago Works to be shipped to Isuzu Motor Co., Ltd., Tokyo, Japan.

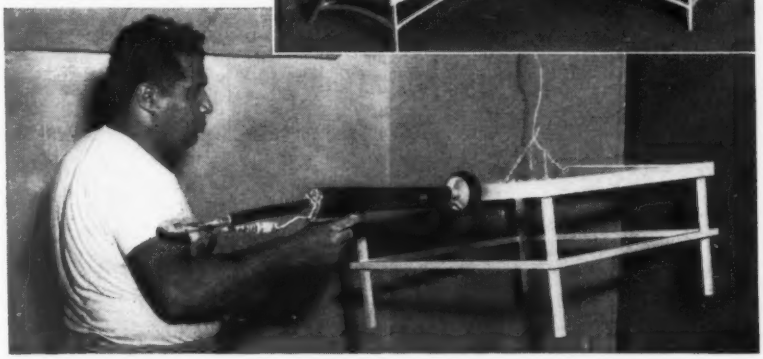
Current domestic orders for appliance

What Would

75% PAINT SAVINGS

Mean in YOUR Finishing Department?

Designed for the New Decade—Beautifully styled BAL HARBOUR line of aluminum furniture by AFCO was winner of the 1960 Apollo Award for pre-eminence in design. The uniform, high quality finish is applied electrostatically with the Ransburg No. 2 Process Hand Gun.



Faster . . . Cleaner . . . Cheaper—The "wrap-around" feature of the No. 2 Process Electrostatic Hand Gun paints all areas of this type of work from one side only, providing a 75% paint savings and a 700% increase in production volume over former air hand spray.

RANSBURG

Ransburg No. 2 Process Electrostatic Hand Guns are providing a 75% paint savings in the painting of beautiful AFCO aluminum furniture.

AFCO Aluminum Furniture Co., Inc., Miami, Fla., replaced hand spray with two Ransburg Electrostatic Hand Guns. Along with paint and labor savings, quality of the work was improved with greater uniformity. And, production volume was increased a healthy 700%! Formerly, they were painting approximately 100 items a day. NOW, with the faster, cleaner Electrostatic Hand Guns, they paint from 700 to 800 pieces per day. Electrostatic is faster because the "wrap-around" characteristic of Electro-Spray paints all areas of this type of work with a pass from one side only.

NO REASON WHY YOU CAN'T DO IT TOO

Write for information and literature about this revolutionary, new painting tool. See how the Ransburg Electrostatic Hand Gun can save time . . . paint . . . and cut costs in YOUR finishing department. If your production justifies, it'll pay you to investigate Ransburg's *automatic* electrostatic spray painting equipment. Write for our No. 2 Process brochures which show numerous examples of modern production painting in both large and small plants.

RANSBURG Electro-Coating Corp.

Box 23122, Indianapolis 23, Indiana

500 gallons of insurance against fire hazards

Because the "solvent" in this dip tank is plain old fireproof water, even a flame from a torch won't set the finish on fire. It's a Glidden water-reducible finish, containing no volatlie solvents, no combustibles, no explosive fumes, no toxic or irritating chemicals.

Water-reducible finishes let you apply more paint in one application than with solvent systems. Costs are competitive with those of solvent-type finishes.

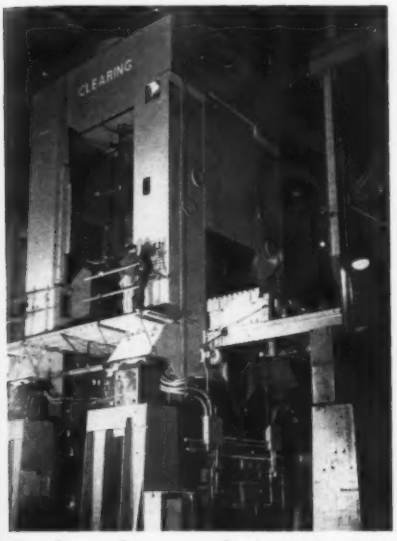
Glidden will help you switch to water-reducible finishes for your products. Ask your Glidden salesman for information on the complete line including new gloss finishes.

QUALITY Glidden PRODUCTS

FINISHES FOR EVERY PRODUCT
The Glidden Company
INDUSTRIAL PAINT DIVISION
900 Union Commerce Building • Cleveland 14, Ohio
In Canada: The Glidden Company, Ltd., Toronto, Ontario

No matter what your product, process, or problem, Glidden finishes plus Glidden Technical Service can provide the answer.

manufacturers, motor car builders and other fabricators include a $4.5 million press order for Ford and an automated wheel line for Chevrolet.



One thousand ton press for Isuzu Motor Co.

The press for Isuzu Motor Co. is a fully-enclosed design, incorporating a two-speed clutch, moving bolsters, cushions with hold-down devices, hydraulic locking devices, overloads, die space lighting and a new-type automation switchboard.

The press, weighing approximately 650,000 pounds is of the bottom-drive type with bed dimensions of 84 inches F to B x 108 inches R to L, slide dimensions of 66 inches F to B x 90 inches R to L (inner slide), and 84 inches F to B x 108 inches R to L (outer slide). The stroke of the inner slide is 38 inches, and the outer slide 27 inches. Draw speed is 56 feet per minute.

Painting Facilities Increased

A major expansion of facilities to produce painted coil is underway at Kaiser Aluminum & Chemical Corp.'s Ravenswood, W. Va., works, with the installation of equipment to coat aluminum in widths up to 48 inches.

The new paint line will be capable of handling coil in gauges ranging from .006 to .064 inches. It is expected to be in operation by mid-summer of 1961.

Detroit Controls Gets New Name

F. J. Kreissl, president of the Detroit Controls Div. of American Radiator & Standard Sanitary Corp., has announced that the division's name has been changed to American-Standard Controls Div.

"Identifying the division more closely with American-Standard, our parent organization, this new name is in keeping with our steady growth pattern during the past few years and consequent broadening of our product lines and diversification of marketing efforts," Kreissl said.

American Nickeloid Moves Office

Moving of the Chicago sales office of the American Nickeloid Co. from its loop location to a new address at 6037 N. Cicero Ave. on the city's northwest side has been announced by Carl C. Struever, general manager of the company.

This move comprises the latest in a Nickeloid program of relocation of all its metropolitan sales and service offices from downtown addresses to less congested and more strategical "in the field" locations. Recently the firm relocated its New York and Philadelphia offices similarly.

Electrical Women's Round Table Holds Annual Convention

Electrical Women's Round Table, Inc. held its annual convention at the Edgewater Beach Hotel, Chicago, on January 11. Miss Anne Lyng, national president of the organization, stated that this was one of the best attended conventions that they had ever had. Numerous comments from members in attendance indicated that they felt the program had been an excellent one.

The luncheon speaker was Mrs. Betsy Ross Martin, president of B. R. Martin Associates, Inc., Chicago, who spoke on "The Local Market: 'Handle with Care'." The afternoon session consisted of two interesting and informative talks. Louis Cheskin, of the Color Research Institute of America, spoke on "Living with Design and Color — What It Can Mean to You." John Coppinger, Phillip's Marketways, Inc., talked on "Sales Psychology."

Following the reception, the annual banquet speaker was Norman Ross, radio, TV, and newspaper commentator, whose subject was "The World Today."

Quaker State Ups Capacity

Quaker State Metals Co., Lancaster, Pa., a division of Howe Sound Co., is expanding operations to increase its aluminum sheet and coil production capacity by 150 percent — up to 150 million pounds per year.

Immediate plans call for a total addi-

to Page 98 →

"If you can't stand the heat —stay out of the kitchen"

MEYERCORD HEAT RESISTANT LINE OF DECAL TRANSFERS

H-R Heat Resistant	**S-H-R** Sustained Heat Resistant
H-R-T Heat Resistant Tubes	**H-H-R** High Heat Resistant

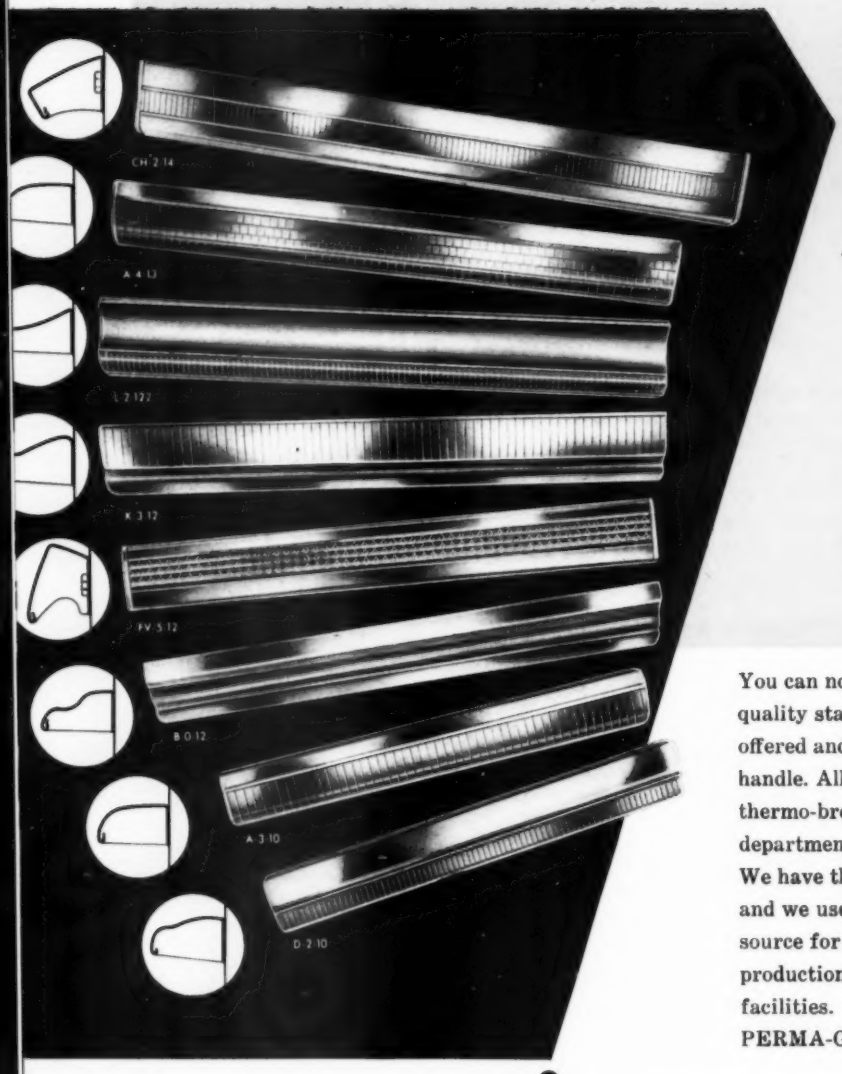
Ordinary Decals, when used as trademarks or operating instructions on products exposed to heat range of 150°F to 220°F will discolor, deteriorate and disappear.

Meyercord's exclusive H-R line of transfers—Heat-Resistant—will withstand operating temperatures up to 1,000°F. Four different types of H-R transfers are available for the job.

Write for Technical Bulletin No. 600. For Heat-Resistant markings specify Meyercord's H-R line.

Write today . . . on company letterhead, please

the MEYERCORD CO. Dept. B-350, 5323 W. Lake St., Chicago 44, Ill.

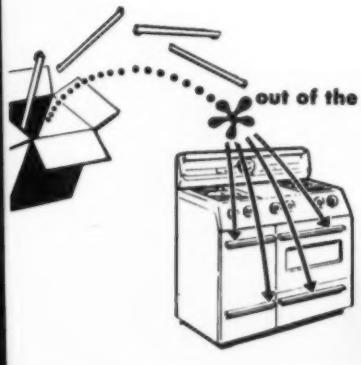


PERMA-GRIP® handles

You can now purchase your appliance handles built to Mills' quality standards. Twelve standard models are offered and six standard patterns are available on any model handle. All handles have plastic spacers which serve as a thermo-break. If you wish, consult with our engingeering department regarding special custom requirements. We have the skilled personnel, the specialized equipment, and we use the right materials to assure a reliable source for quality PERMA-GRIP handles. Let our specialized production lines serve as a part of your sub-assembly facilities. Phone or write us for complete details on PERMA-GRIP handles.

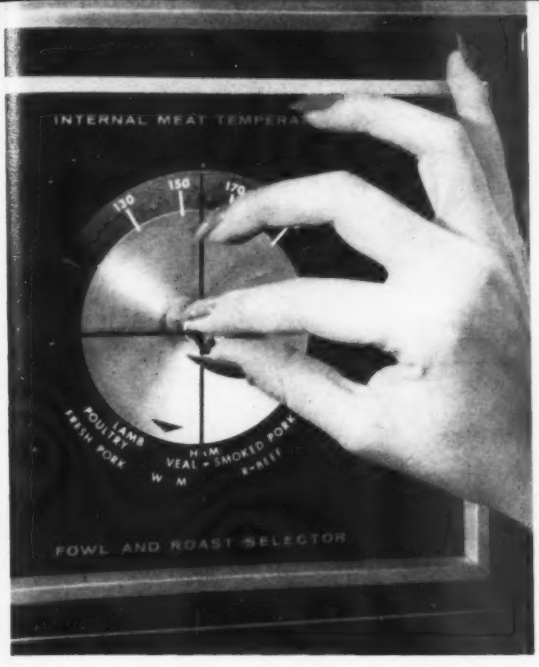
O'Keefe & Merritt

The O'Keefe & Merritt range shown at the right is equipped with PERMA-GRIP door handles. It is also equipped with the universally accepted PERMA-VIEW oven door window, another engineered product of Mills Products, Incorporated.



MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN



Automatic controls on the new Caloric "Ultramatic" assure the right oven temperature, measured automatically inside the meat being cooked.

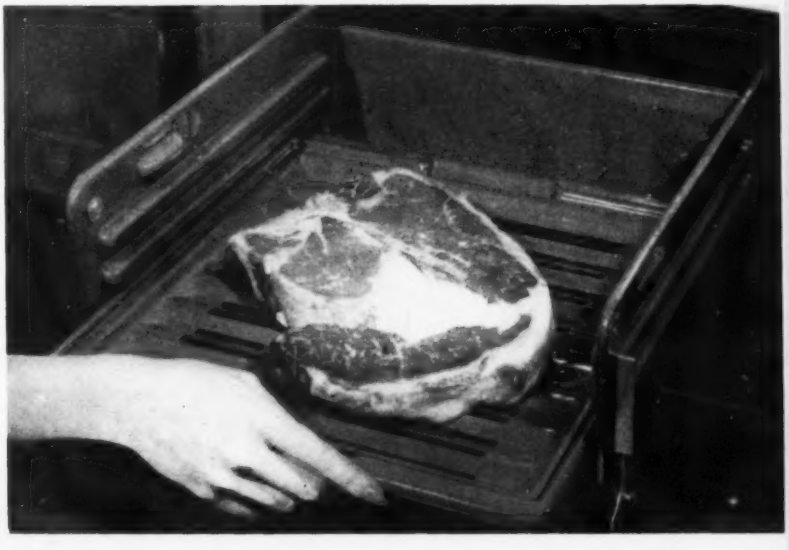
Caloric "Ultramatic" built-in oven-broiler

seven standard colors offered

The new oven-broiler units include such features as: an 18" wide oven that fits a standard 24" wide cabinet opening, a "Keep-Warm" oven system allowing temperatures down to and including 140 degrees, and a choice of seven standard colors.

The oven door of the new Caloric "Ultramatic" built-in lifts off its hinges for easy cleaning. Also, a removable broiler door is one of the "easy-to-clean" features of the new oven-broiler.

Broiler tray in the new Caloric "Ultramatic" built-in can be placed in any of six positions for exact cooking control.



Gown by
Fon Tayne
reflected in
stainless by
Crucible
Steel
Company
of America
Stainless by
CRUCIBLE
where a fine finish is only the beginning

Easy

Mrs. Helen Kendall, consultant

"I believe that the day of jamming big, big loads in washing machines should have gone long ago, because the fabric picture is such that it is just not good for clothes. It's not the way to take 'ready-to-wear' clothes out of automatics, because they get more wrinkled and twisted. I think there is a concept coming — that is to just collect a few things and wash as you go — which brings in the combination."

Parker Ericksen, vice president and general manager

"I think we are all talking too pessimistically about '61. One month may not make a season, but in November our sales to dealers were 43 percent over October. Here at the show we find the dealer wants to sit down and talk business; he's not visiting so lightly as he does some shows. He wants to go in the back room and say, 'Have you got some ideas? What can you do to help me get some business?' He's in a good mood; he's in a mood to talk seriously."

Sunray Stove

Jerry McLaughlin, assistant to sales manager

"The Sunray Deco range, which was introduced in January, 1960, has been modified to include a flange as an integral part of the top trim, so that the flange slides over the edge of a standard cabinet top. This feature has wide builder acceptance because of the ease of installation and the reduction in cost. It saves one cabinet in a kitchen setup and requires no separate base.

"This unit is a 100-percent porcelain enameled range, except for the lift-off top, which has a brushed chrome finish. The top can be raised and entirely removed in a single operation."

The Chicago Market

→ *from Page 25*

Maytag

The 13 millionth home laundry appliance produced by The Maytag Co. was on display at the Market. The deluxe automatic washer is viewed by Claire Ely, Maytag vice president-marketing, and Mrs. Sherman Tweedt of Carthage, Ill. Mrs. Tweedt and her husband are in their 30th year as Maytag dealers.

The unit displayed is finished in the company's new copper color. The company recently announced that its combination washer-dryers are now available in pink, yellow, turquoise, white and copper.

AT A SPECIAL MARKET PRESS CONFERENCE officers of four leading associations discussed the outlook for appliance sales in 1961 (see the January MPM "Forecast" section). The speakers were, from left, Edward Taylor, Motorola, chairman, Consumer Products Div., EIA; Jack Sparks, Whirlpool, vice chairman, Consumer Products Div., NEMA; Wendell C. Davis, Cribben and Sexton, president, GAMA; and Claire Ely, Maytag, chairman, AHLMA.

for complete satisfaction specify PROCTOR electric Range Controls

Assurance of customer satisfaction and of top range performance begins with component quality. Range manufacturers look to their suppliers for experience, for excellence of design, for dependable quality, for delivery on-schedule and for expert technical assistance.

consider electric range controls

* PROCTOR, the pioneer in the field, has produced far more bi-metallic range controls than **all other suppliers combined.**
* PROCTOR controls are simple, sturdy, convenient, compact and dependable.
* PROCTOR range controls are **all-PROCTOR-made**—there can be no question about their quality and uniformity.
* PROCTOR can fill your orders in any quantity and will meet your most stringent delivery requirements.
* PROCTOR's record of outstanding product performance attests to the competence of the PROCTOR technical staff.

The PROCTOR INFINITE VARITHERM
gives an infinite selection of cooking heats—over the entire element

The PROCTOR FLASHER INFINITE
combines infinite control with fast starting.

The PROCTOR "SELECTRONIC" PAN CONTROL
controls the cooking temperature at the pan and adds infinite selection.

The PROCTOR BROILATROL
adds infinite control to broiling and improves baking and roasting too.

P.S. THE PROCTOR-SILEX CORPORATION CONTROLS DIVISION
4000 Coolidge Avenue, Baltimore 29, Maryland

METAL PRODUCTS STATISTICS

		1960 (Units)	1959 (Units)	% Change
Gas Furnaces	Nov.	71,100	87,500	-18.7
	Jan.-Nov.	842,700	988,300	-14.7
Gas Boilers	Nov.	11,195	12,256	-18.7
	Jan.-Nov.	134,732	140,279	- 4.0
Gas Conversion Burners	Nov.	11,000	13,800	-20.3
	Jan.-Nov.	126,700	148,400	-14.6
Oil-Fired Central Heating Equipment	Oct.	62,378	87,168	-28.4
	Jan.-Oct.	455,231	525,502	-13.4
Gas Ranges, Free-Standing	Nov.	115,300	126,100	- 8.6
	Jan.-Nov.	1,377,800	1,530,600	-10.0
Gas Ranges, Built-In	Nov.	25,700	33,500	-23.3
	Jan.-Nov.	317,400	323,800	- 2.0
Gas Water Heaters	Nov.	162,900	199,100	-18.2
	Jan.-Nov.	2,470,600	2,760,700	-10.5
Gas Vented Recessed Wall Heaters	Nov.	32,000	41,400	-22.7
	Jan.-Nov.	337,400	412,900	-18.3
Gas Floor Furnaces	Nov.	7,800	8,800	-11.4
	Jan.-Nov.	83,500	94,400	-11.5
Gas Direct Heating Equipment	Nov.	33,200	35,500	- 6.5
	Jan.-Nov.	362,500	377,100	- 3.9
Gas Unit Heaters & Duct Furnaces	Nov.	18,100	17,100	+ 5.8
	Jan.-Nov.	150,400	144,400	+ 4.2
Gas Incinerators	Nov.	3,500	3,700	- 5.4
	Jan.-Nov.	39,800	41,100	- 3.2
Electric Household Refrigerators	Nov.	253,300	265,900	- 4.7
	Jan.-Nov.	3,153,000	3,502,400	- 9.9
Electric Farm & Home Freezers	Nov.	73,000	64,900	-11.1
	Jan.-Nov.	1,017,200	1,142,200	-10.9
Electric Ranges, Free-Standing	Nov.	65,000	72,500	-10.3
	Jan.-Nov.	779,300	854,000	- 8.7
Electric Ranges, Built-In	Nov.	52,500	71,500	-26.6
	Jan.-Nov.	617,300	685,300	- 9.9
Electric Water Heaters	Nov.	52,300	31,000	+68.7
	Jan.-Nov.	621,200	739,000	-15.9
Electric Dishwashers	Nov.	47,600	57,700	-20.2
	Jan.-Nov.	509,700	482,200	+ 5.4
Electric Food Waste Disposers	Nov.	60,100	67,200	-10.6
	Jan.-Nov.	675,500	711,000	- 5.0
Combination Washer-Dryers	Nov.	9,076	16,482	-44.9
	Jan.-Nov.	141,296	181,834	-22.3
Washers—Automatic & Semi	Nov.	221,402	243,248	- 9.0
	Jan.-Nov.	2,382,044	2,718,735	-12.4
Washers—Wringer & All Other	Nov.	53,899	69,548	-22.5
	Jan.-Nov.	668,636	850,405	-21.4
Electric Dryers	Nov.	94,271	98,786	- 4.6
	Jan.-Nov.	727,050	818,663	-11.2
Gas Dryers	Nov.	47,778	58,261	-18.0
	Jan.-Nov.	392,724	428,479	- 8.3
Vacuum Cleaners	Nov.	280,550	290,130	- 3.3
	Jan.-Nov.	3,058,595	3,127,012	- 2.2
Metal Furniture	Jan.-Nov.	*	*	- 8.0
†Television	July	283,475	*	*
	Jan.-July	3,491,336	3,334,540	+ 4.5
†Radio (1)	July	890,359	*	*
	Jan.-July	9,414,879	7,936,621	+15.6
Typewriters	Oct.	116,234	*	*
	Jan.-Oct.	983,517	*	*
Steel Barrels & Drums	Oct.	2,538,900	2,107,094	-17.0
	Jan.-Oct.	25,716,892	28,112,749	- 8.5
Room Air Conditioners	Nov.	87,400	310,600	-71.8
	Jan.-Nov.	1,459,900	1,612,700	- 9.5
Unitary Air Conditioners (3)	Jan.-Sept.	261,634	*	+12.0
Heat Pumps	Jan.-Sept.	20,916	*	+29.0

(1) Including auto receivers (2) Except for household refrigerators
(3) Including heat pumps
* Not reported † Output — all other figures are factory shipments or factory sales

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

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Looking for waste-points in your production? Then spotlight your cleaning operation, and the savings which can be achieved by the profit-geared team of Magnus chemicals, equipment and methods.

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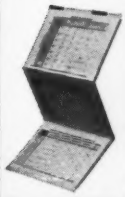

CLEANING EQUIPMENT

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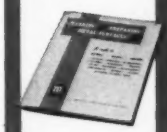

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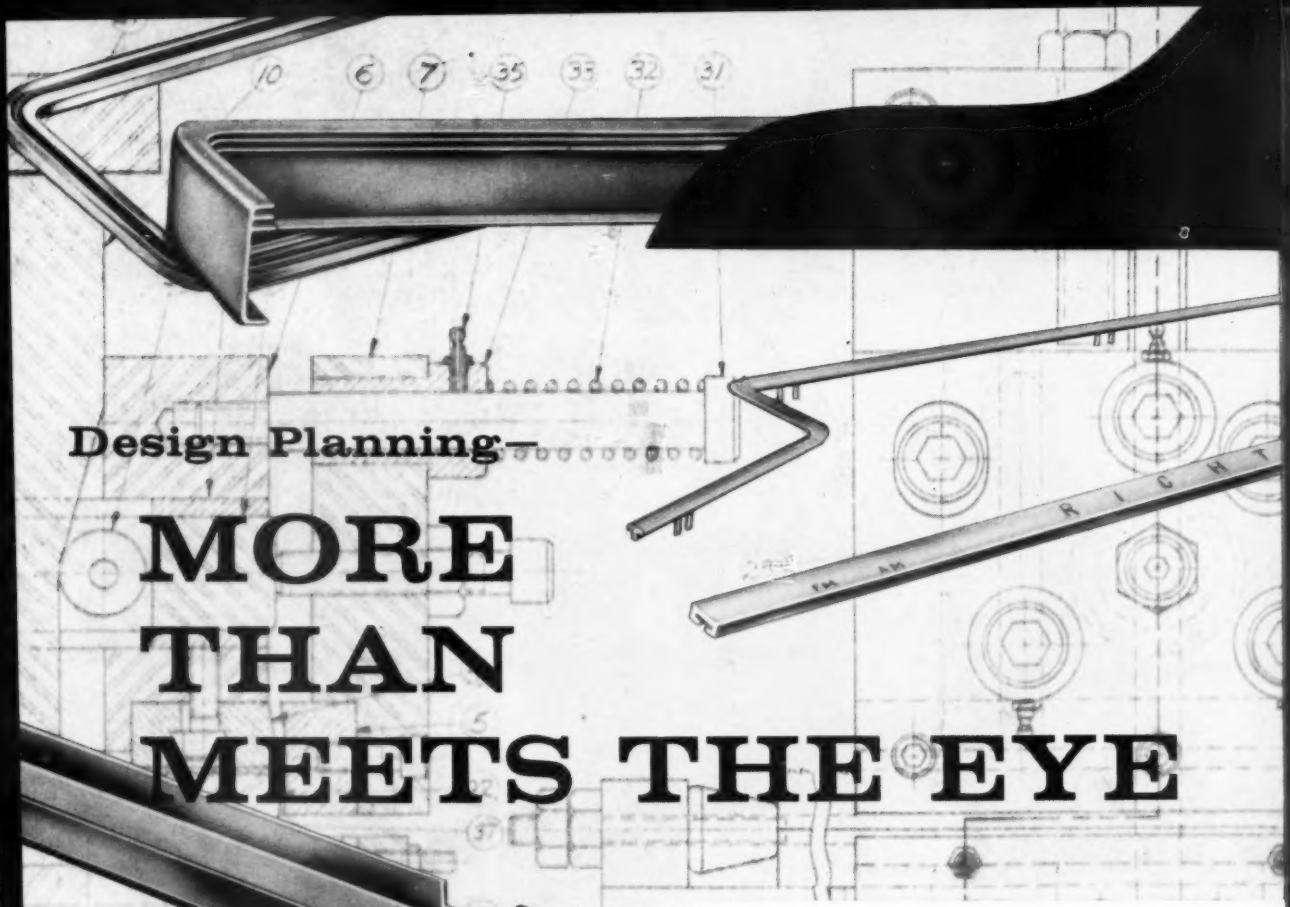
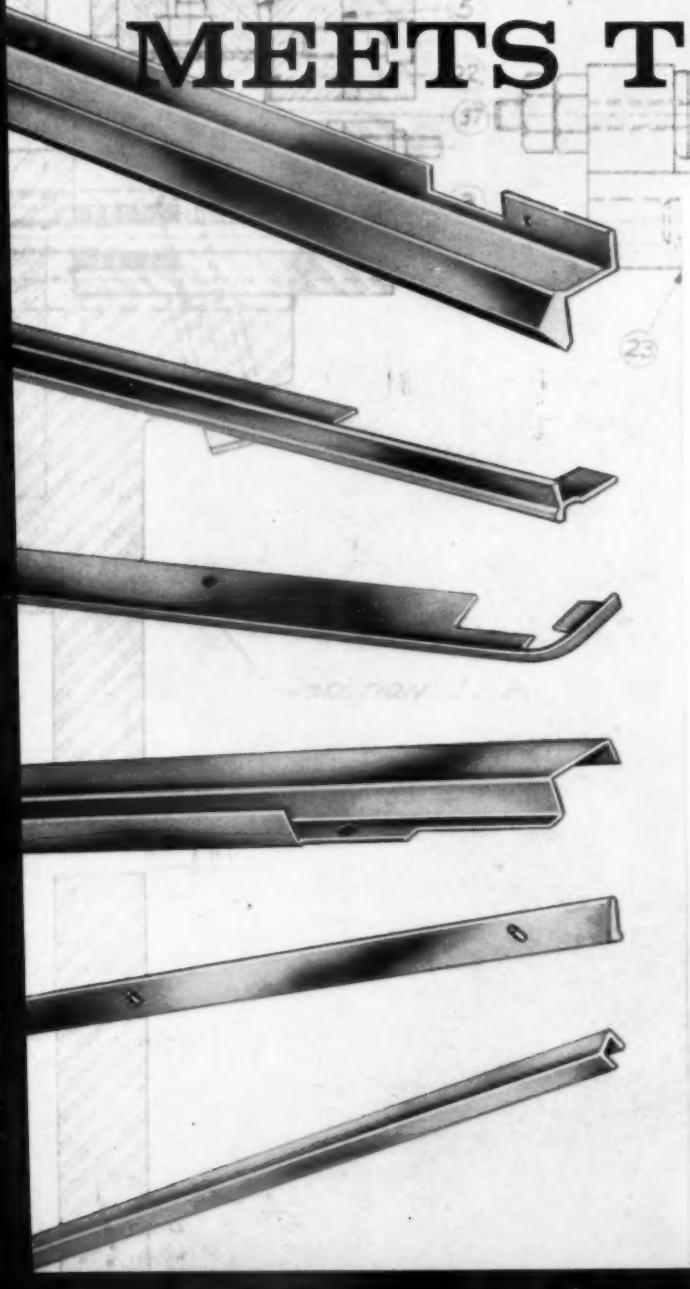


Design Planning—

MORE THAN MEETS THE EYE



Your eyes can tell you quite a few good things about the typical Kinkead extrusions and roll-formed shapes shown here.

But they cannot perceive the concentrated *design and engineering planning* which goes into products like these long before they are produced at Kinkead.

By integrating a coöperative, skilled design service with the industry's most efficient production methods, Kinkead can deliver a product functionally perfect for its application at an economical production cost.

Whether your problem is to reduce cost, simplify application, combine functions or any one of a thousand others which might be pertinent to the job you are planning, Kinkead's business is to provide the solution.

In addition to furnishing practically any type of aluminum extrusion or roll-formed shape of aluminum or stainless steel, Kinkead services also include such supplementary operations as polishing, anodizing, screen painting, bending, notching and stud welding.

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James E. Maloney has been appointed to the newly-created post of research supervisor, **Chemical Processing Division, Detrex Chemical Industries, Inc.,** according to W. L. McCracken, director of research.

Charles M. Hoover has been appointed to the post of director of marketing of the **Geo. D. Roper Corp.,** Kankakee, Ill. He has served for the past two years as general sales manager of the Marquette Corp., Minneapolis, marketing a full line of major home appliances. He previously was affiliated with the Wedgewood division of Rheem Mfg. Co. in the same capacity.

The Crane Co. Industrial Products Group announces the appointment of **Donald R. DeVeaux** as general manager of finance for manufacturing and marketing, Prior to his present assignment, DeVeaux served as assistant to C. H. Lovelace, vice president of the group.

John G. Halland has joined **Caloric Appliance Corp.** as administrative assistant in the **Great Lakes Div.,** it has been announced by Philip W. Hunt, Caloric Div. manager.

A. E. Chugden will be sales representative under the direction of C. L. Coleman, Houston district manager in the new sales office in New Orleans. The office is being opened in the Oil and Gas Building by the **Armco Div.** of **Armco Steel Corp.,** according to Murray B. Wilson, vice president, sales, Armco Div.

Frank B. Kreider has been appointed to the position of director of marketing for **DeSoto Chemical Coatings, Inc.,** Chicago. He will coordinate and direct the marketing, sales, advertising and public relations activities for all divisions of the corporation.

Miss **Rosemary Archibald** has been appointed home service director for **Harper-Wyman Co.,** Chicago. She will be in charge of all phases of the firm's home service activities. Prior to joining Harper-Wyman, Miss Archibald had served as kitchen planning supervisor with the Milwaukee Gas Light Co., and district home economist for International Harvester Co.

Alton W. Beck, Robertshaw-Fulton Controls Co.'s vice president, marketing, has been transferred to the West Coast to become vice president, Western operations. Concurrently, **Arthur G. Baitz,** formerly director of engineering planning, became director of marketing. The announcement was made by Thomas T. Arden, president of Robertshaw-Fulton.

The **Glen Alden Corp.** has announced the appointment of **Leslie G. Taylor** to vice president in charge of all manufacturing operations, and a member of the board of directors; **Thomas J. Rowe** to vice president and treasurer of the corporation; and **Austin List** as vice president and assistant to the president.

Paul Ewbank has been named first vice president and assistant general manager of **Union Steel Products Co.,** Albion, Mich.

Concurrently, **Harry Gardner** has been appointed manager of Union Steel Products Co.'s newly-created marketing services department.

Joseph Giordano has been elected to the newly-created post of vice president of engineering for the **Fedders Corp.,** according to U. V. Muscio, executive vice president.

Donald E. Barton has been promoted to manager of market development, it has been announced by G. E. Ankeny, general sales manager, **The Maytag Co.** As a key staff assignment, Barton will perform general liaison between the field and company headquarters, and will develop programs to assist field personnel in development of markets.

Concurrently, **Ivan Craft,** who joined Maytag's engineering training program last June, has been promoted to a construction engineer.

Roland E. Pillat has been named sales manager for **Typhoon Heat Pump Div., Hupp Corp.,** according to Harry W. Jobes, division general manager.

Lawrance W. Wightman has been appointed assistant to the president in charge of operations of **Emerson Electric Mfg. Co.,** it has been announced by W. R. Persons, president.

Milo J. Chavez has been appointed vice president, sales, and **C. Joe Fisher** has been promoted to vice president, engineering, of **Southwest Mfg. Co.**

The appointment of **James M. Parker** as administrative assistant to the national sales manager has been announced by the **Norge Div. of Borg-Warner Corp.**

Willard B. Buck has been appointed sales manager, air conditioning, it has been announced by H. Blake Thomas, vice president and general manager of the Danville, Ill. division of **Bohn Aluminum and Brass Corp.**

William C. Swanson has been appointed industrial representative for

CHUGDEN

KREIDER

EWBANK

GIORDANO

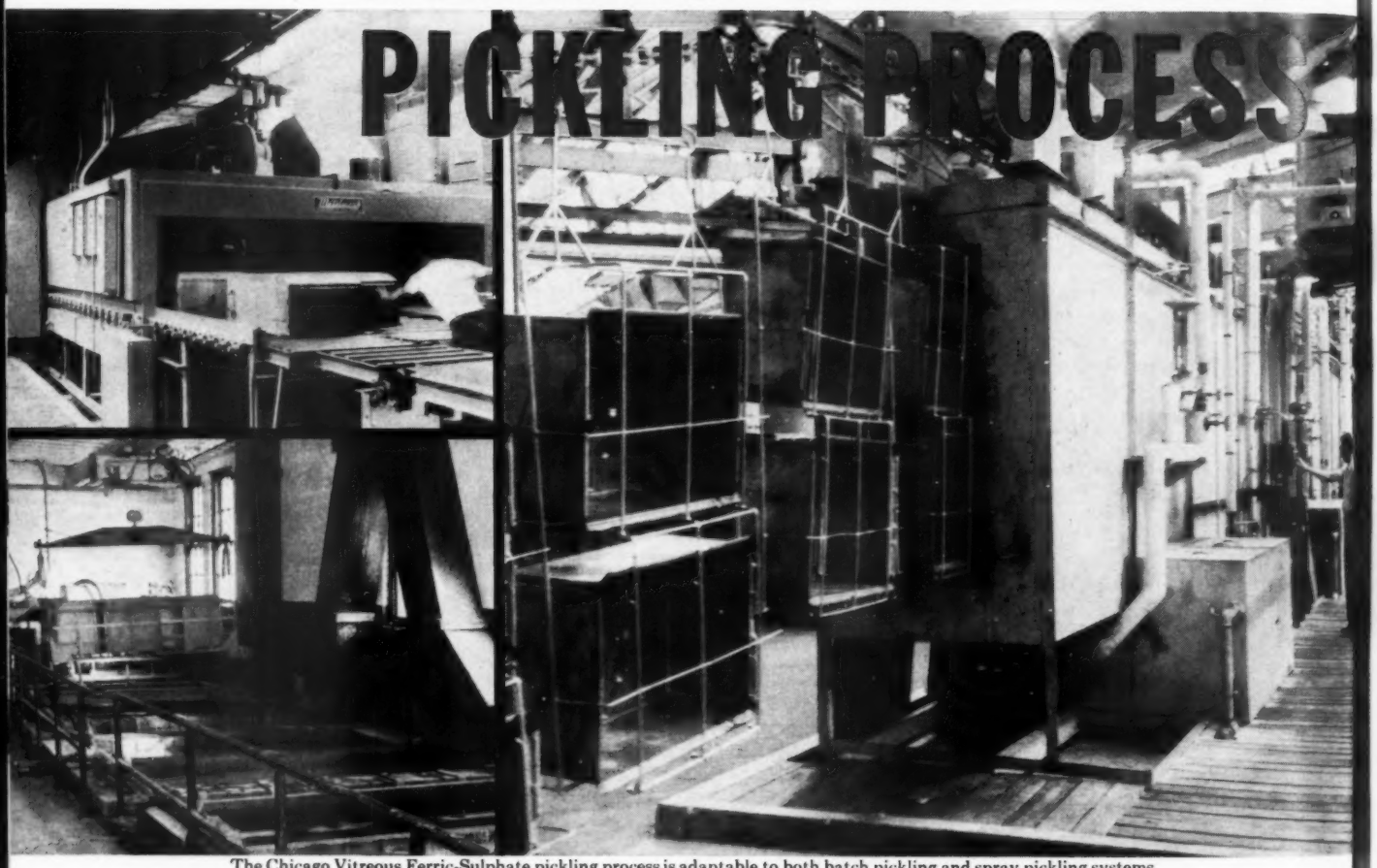
BUCK

SWANSON

IMPROVED ENAMELING RESULTS ARE YOURS...NOW

with the Exclusive Chicago Vitreous

FERRIC-SULPHATE PICKLING PROCESS



The Chicago Vitreous Ferric-Sulphate pickling process is adaptable to both batch pickling and spray pickling systems

Among the many advantages that the Chicago Vitreous ferric-sulphate pickling process offers, the most significant is the degree to which you can improve your enameling results. This applies to conventional 2-coat systems as well as to direct-on cover coat application to special steels. If you are interested in learning more about this important development that is already being used in production, discuss it with your Chicago Vitreous representative. He can tell you how ferric-sulphate pickling can help you further improve your operations.

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Despatch Oven Co., Minneapolis. His service area will include several counties in eastern and southern Wisconsin.

Dr. **Franklin B. Rote** has been appointed director of research and development of the **Mueller Brass Co.**, Port Huron, Mich., according to F. L. Riggin, president.

Concurrently, **Orville R. Payton**, formerly advertising manager, has been named as director of sales promotion, and **Philip L. Wixson**, formerly assistant advertising manager, has been named to take over Payton's former post.

John R. Miller, Jr., of T. R. Miller Mill Co., Brewton, Ala., has been elected president of the **Wirebound Box Manufacturers Association.** He succeeds K. P. Lane of David M. Lea & Co. Also, **J. D. Capps**, assistant secretary of WBMA for the past three years, has been elected executive vice president and secretary-treasurer of the organization.

Edwin B. Dietterle has been named district manager of **Ferro Corp.'s** Los Angeles sales territory. He replaces **Louis B. Hart**, who retired from the firm after 36 years service. Other changes announced by the firm include the transfer of **Roland R. Beach** from the Los Angeles territory to New York. He replaces **Bernard G. Murray**, who is being transferred to the staff of the Ferro Color Div.

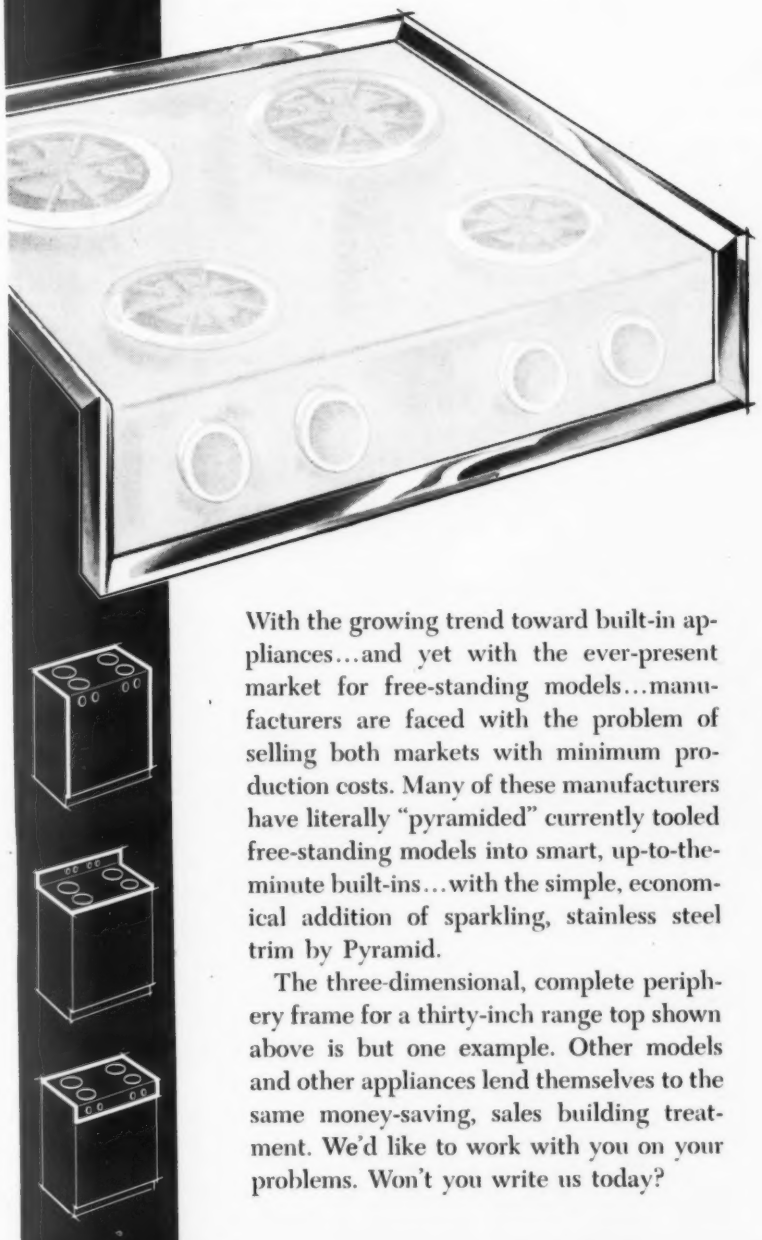
Northwest Chemical Co. has announced the appointment of **John V. Brown** to serve their accounts in the Northwest Ohio area. He will work from his home office at Angola, Ind.

Concurrently, **John M. Peabody** has been appointed to serve Northwest Chemical Co.'s accounts in the Youngstown and Pittsburgh areas. He will work out of the home office at 9310 Roselawn Ave., Detroit.

Lawrence O'Hanlon, formerly chief designer with Titeflex, Inc., and their successor in the filter field, Croll-Reynolds Engineering Co. since 1949, has been appointed chief design and application engineer for the **Filter Div.**, **The Meaker Co.**, subsidiary of **Sel-Rex Corp.**

Hevi-Duty Electric Co., a division of **Basic Products Corp.**, recently announced the appointment of **Raymond C. Nordstrom** to the newly-created post of executive vice president, with responsibilities primarily for the marketing

...free standing models can be PYRAMIDED into built-ins!



With the growing trend toward built-in appliances...and yet with the ever-present market for free-standing models...manufacturers are faced with the problem of selling both markets with minimum production costs. Many of these manufacturers have literally "pyramided" currently tooled free-standing models into smart, up-to-the-minute built-ins...with the simple, economical addition of sparkling, stainless steel trim by Pyramid.

The three-dimensional, complete periphery frame for a thirty-inch range top shown above is but one example. Other models and other appliances lend themselves to the same money-saving, sales building treatment. We'd like to work with you on your problems. Won't you write us today?

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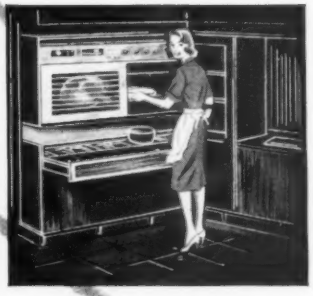
MORE

"CREATIVE DESTRUCTION"

Each successful departure from conventional appliance design has added to the innovator's prestige and has stimulated the demand for his products.

So it was when the first built-in electric meat thermometer was introduced. Again, when signalling was added. More recently, when full automation made it possible to cook and hold a roast indefinitely at any selected degree of doneness.

These developments were spearheaded by King-Seeley's Appliance Control Specialists, whose chief aim in life is the "Creative Destruction" of the conventional —for greater market impact.



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OF
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function. Hevi-Duty, with plants located at Watertown and Milwaukee, Wis., manufactures a complete line of industrial furnaces and ovens, both fuel fired and electrical, laboratory furnaces, and electrical transformers and regulators.

Simon Fisher, president of **National Electric Welding Machines Co.,** Bay City, Mich., was elected president of the Resistance Welder Manufacturers' Association at their annual meeting in Detroit. The newly-elected vice president for 1961 is **Harry V. Beronius,** sales manager of **Swift Ohio Corp.,** Kenton, Ohio.

Bromwell Ault has been elected vice chairman of the board of **Interchemical Corp.,** and **William N. Davies** and **Kenneth B. Lane** have been elected vice presidents.

Andrew D. Hunter has been appointed general manager and chief executive officer of the **Stamford Rolling Mills Co.,** Stamford, Conn., a division of **Howe Sound Co.**

Edward H. Lund has joined **General Controls Co.** as industrial sales specialist for Northern California, according to J. F. Ray, vice president in charge of sales.

J. W. Palmer has been promoted to general manager and **R. D. Critzer** to sales manager of **Hydraulic Press Mfg. Co.'s Cast-Master** operation at Bedford, Ohio. H-P-M is a division of Koehring Co. Palmer has been with Cast-Master since 1947, and served as chief engineer before his recent appointment. Critzer joined Cast-Master from the Onsrud Machine Works, Inc., Chicago.

Arthur E. Steudel, president of the **Sherwin-Williams Co.** since 1940, was recently elected chairman of the board and chief executive officer of the company. Named to succeed him as president was **E. Colin Baldwin** who, for the past year, has been vice president and general manager of the paint and chemical firm. In the same action, **William M. Stuart** was elected a director. He is president of the **Martin-Senour Co.,** Chicago, a wholly-owned subsidiary of the Sherwin-Williams Co.

Chester F. Giermak has been appointed sales manager of **Eriez Mfg. Co.,** Erie, Pa., according to R. F. Merwin, president.

Charles L. Peters has been appointed general manager of **Coldform Div., H. K. Porter Co., Inc.** He will be headquartered in the division's Detroit office. Coldform Division, with its plant located in Frankfort, Ky., manufactures aluminum, stainless and carbon steel decorative and functional parts and assemblies for the appliance, automotive, furniture, trailer, boat and building industries.

Charles A. Volz, Jr. has been elected president of **Olympic Products Co., Inc.,** it has been announced. Formerly vice president and general manager, he succeeds **Joseph B. Schaefer,** who will become chairman of the board of directors.

David W. Jones, Jr. has been appointed the Rocky Mountain area representative for the **Industrial Products Div.** of **The American Welding and Mfg. Co.,** Warren, Ohio, according to Frank J. Shanaberg, manager of sales.

Harry C. Robeson, vice president, sales, **Detroit Stamping Co.,** has been named vice president and assistant general manager.

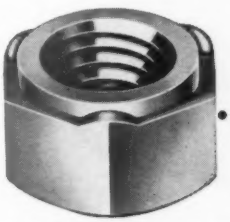
Edward C. Manix has been appointed vice president and general manager of sales for **Quaker State Metals Co.,** a division of **Howe Sound Co.,** it has been announced by Hilliard Y. Smuck, chief executive officer and general manager.

Buchanan Electrical Products Corp., Hillside, N. J., has announced four organizational changes. **George Ustin** has been appointed vice president and general manager; **James O. Johnson** to director of sales promotion and advertising; **Albert Mittleman** to manufacturing manager; and **Charles F. Walker** becomes sales service manager.

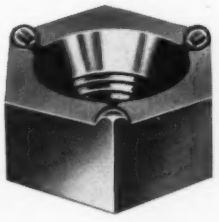
Bee Chemical Co., Lansing, Ill., has appointed **George F. Matacek** district manager of the firm's Western Division, Granada, Calif.

Joseph Hauf has been appointed to the new position of technical director, engineering for the **E. W. Bliss Co.,** it was announced by J. R. Patterson, president. Hauf and his staff will be associated with the company's administrative offices, which will move this spring from Canton, Ohio to Pittsburgh.

Robert C. Tucker has been appointed West Coast representative for the **Firestone Steel Products Co.,** it has been announced by W. S. Kidder, general sales manager for the company. Tucker will handle the products of the Firestone Steel Products division exclusively and will serve distributors, manufacturers and operators in the seven western states.



These 2 GRIPCO® WELD NUTS *for blind assemblies*



provide easier positioning—quicker fastening—extra threaded depth—at less cost—engineered for various gauge metals. With 3 or 6 projections, with or without self-locking threads, these hexagon weld nuts provide a firm, non-rocking electrical connection during welding.

Write for samples and NEW catalog today, or consult the yellow pages in your phone book under "GRIPCO" for the representative nearest you.

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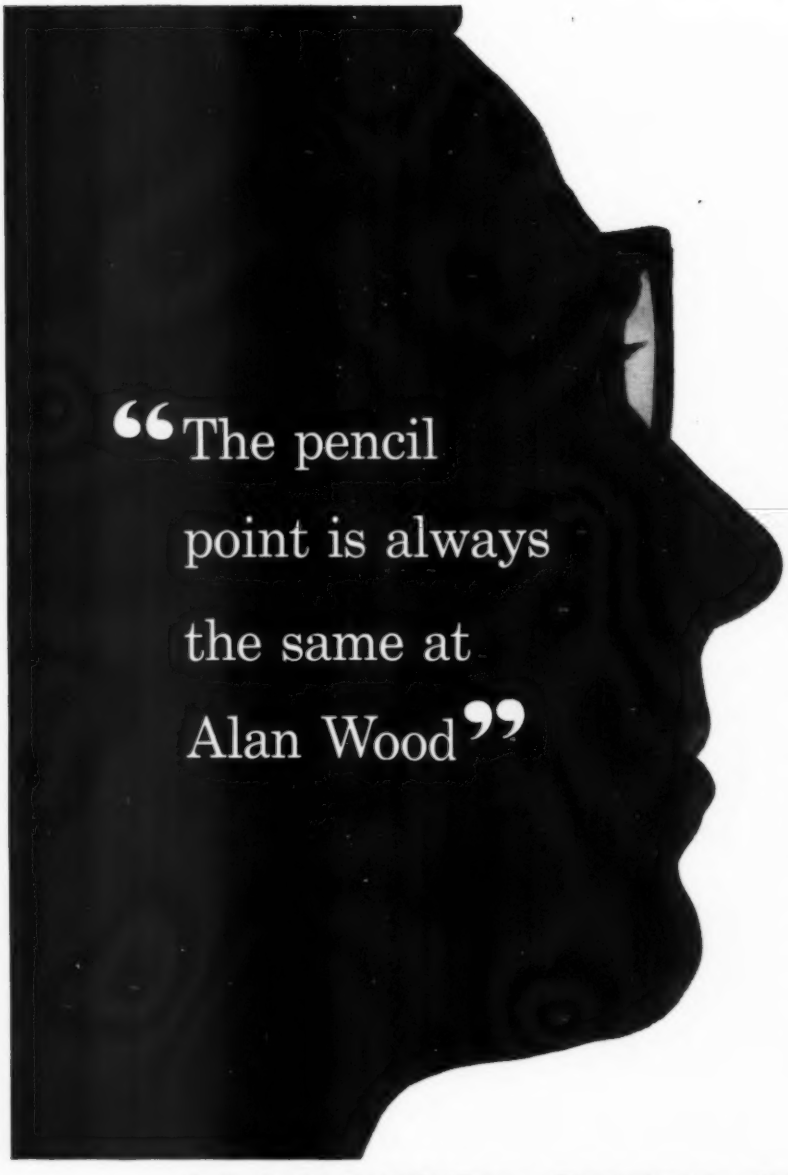

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GENERAL

1960 STATISTICAL REVIEW FOR APPLIANCES AND FABRICATED METAL PRODUCTS (APRIL)

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TYPEWRITER PRODUCTION IN A MODERN MISSOURI PLANT

DESIGN

NEW CONCEPT IN DISHWASHER DESIGN

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METAL-TO-METAL ADHESIVES IN HOME LAUNDRY MANUFACTURING

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NEW STRIP COATING LINE FOR STEEL AND ALUMINUM

A SURVEY OF THERMOSETTING ACRYLIC PAINTS

STRAIN GAUGES FOR EVALUATING STRESSES IN PORCELAIN ENAMELED PRODUCTS

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ADJUSTABLE WELDING FIXTURE

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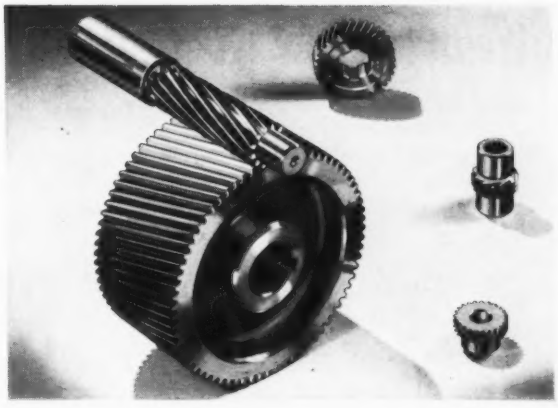

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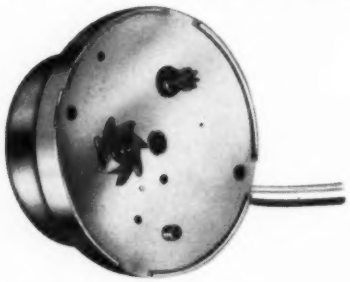
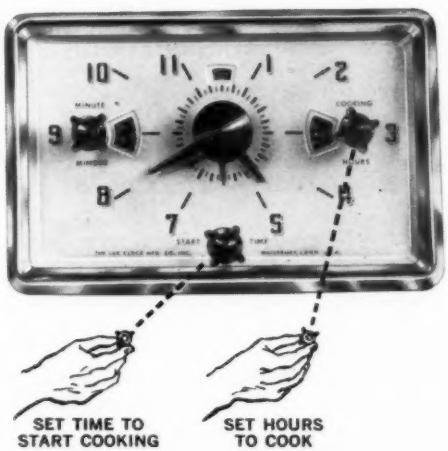
When an appliance timer is already function-perfect, fashion-right, and unbelievably simple to operate, there's just one thing that can add to its superiority—long-term service-free performance . . . and Lux really has it!

The lube-less motor bearings used in every Lux Timer never need lubrication, thereby preventing formation of heat-caused gummy residues, the most common reason for timer motor failure. The precisely engineered Lux Timer has a history of giving manufacturers and dealers no post-sale grief in repeated service calls that cost time, money, and reputation.





so simple and so precise . . .

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Sell the appliance that's equipped with a Lux Timer, the built-in extra effort needed in today's competition.

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YOUR TIME-REMINDER LINE

LUX . . . first . . . for lasting TIME

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new industrial literature

Press Brake Dies

Over 360 drawings of standard and special press brake dies are contained in this 28-page catalog. In addition to listing the standard and special, single and multiple bend forming, blanking, notching and punching dies, the catalog also contains tonnage requirement tables for both punching and bending various thicknesses of mild sheet steel. Complete engineering and design service, as well as tryout and reconditioning services, are also offered.

Write to Dept. MPM, Press Brake Div., The Valeron Corp., 56 Factory Rd., Addison, Ill.

General-Purpose Relays

An eight-page illustrated bulletin on "Diamond H" General-Purpose Relays has just been released. The compact, 25-amp relays are shown in a variety of standard mounting arrangements, with several optional types of terminals and eight different SP and DP contact combinations.

Write for Bulletin WU-09 to Dept. MPM, The Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.

Aluminum Tubing

A booklet titled "Devoted to Aluminum — Dedicated to Service" is available from this firm, explaining the products and services offered. The company, producer of a wide range of drawn, welded and butt seam aluminum tubing in various sizes, gauges, alloys and finishes, also offers operations such as semi-fabricating and assembling of component parts to meet manufacturers' needs. Such operations as swaging, drilling, piercing, bending, precision cutting and deburring are also done by the firm.

Write for the booklet to Dept. MPM, Pfister Aluminum Corp,. 54 W. Allendale Ave., Allendale, N. J.

Industrial Heating Catalog Supplement

As an appendix to its current industrial electric heating catalog No. 60, this firm has announced a new catalog supplement CS-600. The supplement contains specifications and product illustrations of electric heater bands, air heating elements, blower-type heaters, immersion units, engine heaters, etc.

Write Advertising Dept., Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa.

Power Tools

A newly-revised 92-page catalog describing a complete line of industrial power tools and accessories has been issued. Some of the tools pictured are drill presses, grinders, shapers, planers, jointers, metal and wood cutting lathes, tilting arbor saws, etc.

Complete specifications, catalog listings and descriptions of accessories for all tools are included in the two-color catalog.

Write for a copy to Dept. MPM, Rockwell Mfg. Co., Delta Power Tool Div., 483 N. Lexington Ave., Pittsburgh 8, Pa.

Photoelectric Control Unit

A combination of electronic timer and photoelectric scanner that provides multiple programming sequences, adjustable delay and hold-in times, and provision for light or dark operation, is described in this bulletin. Six systems that provide scanning ranges from two inches to 18 feet are described in detail, with typical applications, dimensions and connections diagrams, and instructions for installation and adjustment.

Write to Dept. MPM, Farmer Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.

Brochure on Bearings

An 18-page brochure detailing 1066 standard bearing sizes is now available for distribution. The stock list includes Oilite bronze in cored, bar, plate stock, discs, and strips, and Super Oilite in cored and bar stock. A special section of the brochure is devoted to engineering data with pictured demonstrations of the self-lubricating qualities of an Oilite bearing.

Write Dept. MPM, Amplex Div., Chrysler Corp., Box 2718, Detroit 31, Mich.

Step-by-Step Technique for Selling Gas Ranges

A manual designed to provide the retail salesman with a tested, step-by-step technique for demonstrating and closing sales of gas ranges is available.

Entitled "How To Strike Gold Selling Gold Star Ranges," the pocket-size 20-page booklet provides the salesman with five simple illustrated steps to follow in demonstrating gas range top burners. "Selling sentences" that have proved to be effective in closing sales as well as general pointers on selling gas ranges are included.

For a free copy of the manual, write Special Projects Editor, Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.

Research and a Flame

If you haven't seen the colorful booklet, "Pemco is research and a flame," you will want to send for one.

The 16-page booklet takes the reader through a frit and color manufacturing plant with many full color photographs.

Seventeen characteristics that determine the formulas for frit are listed. Write to Dept. MPM, Pemco Corp., 5601 Eastern Ave., Baltimore 24, Md.

Stock List of Wing Nuts

A stock list of special wing nuts, immediately available from stock or stock dies, has been published. This flexible service enables manufacturers to select from hundreds of specials to solve fastener problems requiring the use of wing nuts.

For copies of the stock list (Bulletin No. 2004), write Dept. MPM, Gries Reproducer Corp., 400 Beechwood Ave., New Rochelle, N. Y.

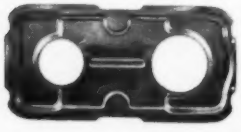
Ball Mill Manual

A manual of porcelain enamel processing called "Ball Mill Wet Grinding of Porcelain Enamels" has been released to

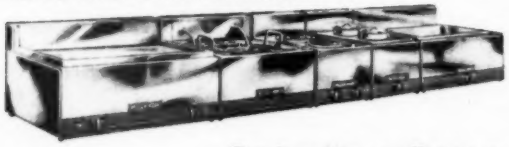
Mass Produce These Parts On Your Production Line

Just form, package and ship any of the items shown . . . and countless more. They're fast, easy and economical to fabricate from APOLLO Pre-Finished Metals. Use the same equipment as for ordinary sheet metal.

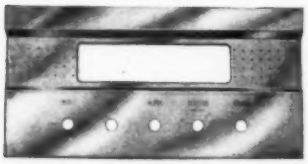
Attractive hardware items in unlimited variety are being manufactured more economically and faster from APOLLO Pre-Finished Brass and Bronze. Available pre-polished and pre-enameled, or pre-finished with bright or satin chrome – the uniform beauty of these parts cannot be equalled by costly piece finishing.



Aerator pans, oven and rotisserie linings, back rail trim, stove doors and tops and broiler pans can be mass produced at less cost when made from APOLLO satin or bright finished tarnish-resistant ChromSteel.

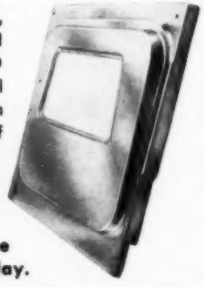


There's nothing as effective as gleaming APOLLO Pre-Finished ChromSteel to simplify production of all types of food service equipment. Sturdy, tarnish-resistant, easy to work, weldable, APOLLO ChromSteel permits a finer job at a fraction of the cost of piece finishing, while greatly increasing production.



APOLLO Satin-Finished BrasSteel is ideal for radio, Hi-Fi and TV cabinet trim, control panels and hardware. Pre-finished surface allows embossing, patterning and silk-screening operations to be performed before forming . . . cuts costs . . . saves time.

Deep draws, such as in this oven door, are no problem when fabricated from Specification Plate on APOLLO ChromSteel. Severe stretching will not draw out the characteristic finish or lessen the corrosion resistance of satin finishes.



Get the facts on how you can eliminate time-consuming shop operations, simplify and increase production. Contact APOLLO today.

Apollo METALS, INC.

6684 S. OAK PARK AVENUE • CHICAGO 38, ILLINOIS

the industry. Carrying the code number Bulletin P-305, the publication is a revision of the older Bulletin T-8 which had been withdrawn from Porcelain Enamel Institute literature files when technological developments in the industry made certain portions of the publication obsolete.

Bulletin P-305 is available at $2.00 per copy by writing to Dept. MPM, Porcelain Enamel Institute, Inc., Associations Building, 1145 Nineteeth St., N. W., Washington 6, D. C.

Booklet on Velocity Switch

A booklet on a velocity switch that can be mounted vertically, horizontally, or at an angle, and can operate on either the inlet or discharge side of a fan, is available. The switch is actuated by the air velocity in a duct and is not responsive to static pressure or suction. One feature is the inability of duct air to pass through the switch, or of external air to pass into the duct through the switch. Primary switch action is magnetic, through a solid barrier; a single-pole, double-throw relay in the secondary circuit carries the workload.

Write for Bulletin C-12 to Dept. MPM, Drying Systems Co., 1800 Foster Ave., Chicago 40, Ill.

Catalyst Exhaust Purifier Case Histories

Catalyst exhaust purifier case histories showing different applications for this fume reducing device are described in a new four-page booklet now available.

The booklet features eleven problem solution case histories of typical exhaust purifier installations on industrial vehicles operating in a steel mill, ball bearing plant, etc. The illustrations show the catalyst purifier installed on gasoline and LP

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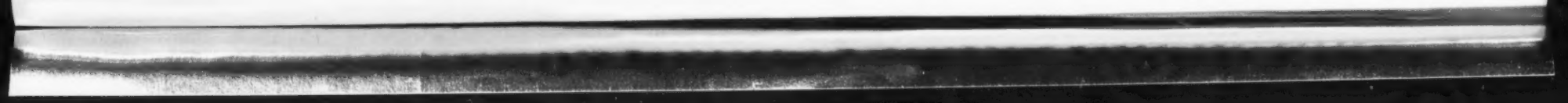

gas lift trucks, power sweepers and diesel shovel loaders. It describes how, in each incident, carbon monoxide, cancer-suspect hydrocarbons and other exhaust fume problems were solved by the use of exhaust purifiers.

The booklet, entitled "Clean Up Your Exhaust Fumes With Oxy-Catalyst Exhaust Purifiers," may be had by writing to Dept. MPM, Automotive Div., Oxy-Catalyst, Inc., Berwyn, Pa.

Revised Welding Definitions

A revision of AWS Standard Welding Terms and Their Definitions is now available. It is the first revision in 12 years, and many changes have been incorporated and much new material added. A new Master Chart of Welding Processes has been prepared in conjunction with the AWS Definitions. The 39 recognized welding processes are presented in a new layout designed for ready reference. Color is used for the first time to separate the various welding processes, and this provides instant identification. The Master Chart is available in two sizes: an 8½ by 11-inch size for desk use, and a 22 by 28-inch size for wall use.

Copies of the AWS Definitions (including desk Chart) may be obtained for $2.00 per booklet. Copies of the wall or desk Chart may be obtained separately at a list price of $1.50 and $.50 respectively, from the American Welding Society, Dept. T, 33 W. 39th St., New York 18, N. Y.

Reusable Explosive Valves

Bulletin 1160 XV illustrates and describes a new series of Conax Con-O-Cap Reusable Explosive Valves. The line features reusable bodies and replacement kits. By firing a small completely contained explosive squib, these normally-closed, lightweight, dead-tight, shutoff explosive valves operate in .002 seconds, and are used for long or short time storage of gases or liquids up to 5000 psi.

Write Dept. MPM, Conax Corp., 2300 Walden Ave., Buffalo 25, N. Y.

Citric Acid Brochure

A complete and authoritative brochure on citric acid has been announced. The 30-page illustrated brochure lists the grade of citric acid available, its physical and chemical properties, and their applications. The booklet covers the use of citric acid in secondary oil recovery, metal finishing, and tanning. It also includes chapters on ion exchange, and other areas of industrial use, such as enameling, anodizing and plating.

Write for "Citric Acid" to Dept. MPM, Miles Chemical Co., Elkhart, Ind.

Metal Curtain Wall Manual

A completely revised edition of the Metal Curtain Wall Manual, containing more than double the volume of information in the original manual published in 1959, is now available to architects.

The Manual has been prepared by the Metal Curtain Wall Division of the National Association of Architectural Metal Manufacturers, and will be sent without charge to all holders of the first edition, in addition to other architectural offices.

Architectural offices that do not have a copy of the original Manual should request copies of the revised Manual, using the firm's letterhead. Additional copies will be furnished to architects, architectural students and to NAAMM members for $3.50 per copy, and to prospective members at $5.00 per copy.

Requests should be sent to Dept. MPM, National Association of Architectural Metal Manufacturers, 228 N. LaSalle St., Chicago 1, Ill.

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The combination of Ing-Rich plant tested Frits and Ing-Rich practical enameling technicians might be able to help you *Trim The Fat.*

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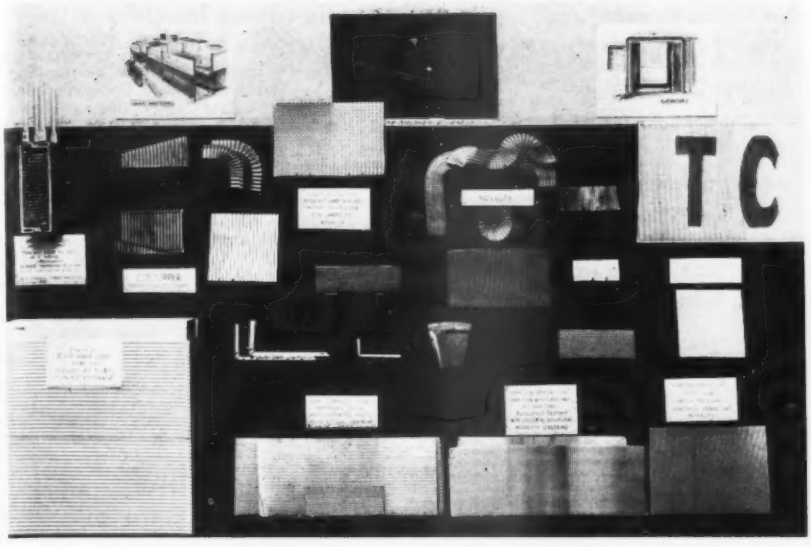


Corrugated metal for a wide variety of applications, such as air conditioners, space heaters, heat evacuators, wave guides, curtainwalls, vehicular bodies, and shipping containers can be formed at lower cost than heretofore by a new machine developed by the Twin Coach Co., Buffalo, N. Y.

Corrugated metal formed by folding

A NEW METAL CORRUGATING MACHINE has been developed by the Twin Coach Co., Buffalo, N. Y.

The machine employs a new concept in metal forming: metal is folded in contrast to the traditional method of forming corrugations by drawing. The key to the process is a cam-controlled action, which moves the forming dies in both horizontal and vertical planes. Simultaneous perforating, offsetting, slotting or lancing is possible, affording a wide variety of patterns.

Corrugated metal can be used in such products as air conditioners, space heaters, heat evacuators, curtain walls, vehicle bodies and shipping containers.

According to the company, the new machine can form aluminum, brass, copper, stainless and regular steel, as well as other materials. Corrugated patterns can be embossed, sheared, bent or stretched.

Twin Coach already has used the machine to produce corrugated office partitions in a variety of configurations which will be installed in the company's new data processing building. The company's project engineers have employed the machine to produce heat exchangers. In addition, the engineers have instituted special studies to perfect aircraft, missile, and vehicle applications.

At present, folded metal is available in gauges ranging from 0.002 to 0.030 inches, at a tolerance of plus or minus 0.001 inches. The machine currently in use at the company takes stock in widths up to 36 inches, and a machine capable of taking wider stock can be built. The present machine handles several rolls of varying widths and patterns simultaneously, up to 36 inches in width.

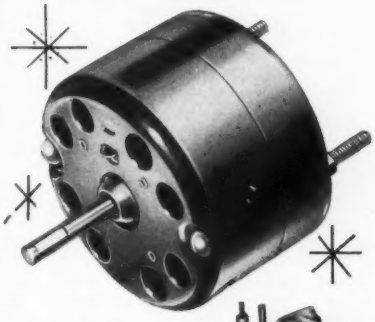
A technician checks the gauge of a sheet as it leaves the corrugating machine. It can corrugate aluminum, brass, copper, steel, plastic and cardboard in a wide variety of patterns, using stock up to 36 inches wide. The machine is said to offer unusual flexibility, and to assure close tolerances.

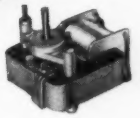
GENERAL INDUSTRIES

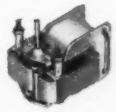
SMOOTH POWER

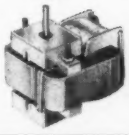
AC MOTORS

pack more power into less space-give dependable trouble-free service!









Standard Line AC Induction Motors from 1/1800 to 1/35 H.P.

In any industry, extra care in manufacturing means an extra margin of dependability. Nowhere else is this "extra" so important as in the manufacture of motors — for a product is only as good as the motor that powers it.

General Industries' complete manufacturing facilities mean economy, too as well as on-time delivery. For any fractional h.p. requirement you'll always be right when you specify G.I.

See Our Catalog in SWEETS 7a-Gen S or write for copy

Quantity Price Quotation On Request

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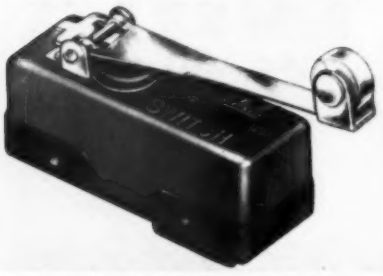
MPM

new supplies and equipment

Sealed, Heavy Duty Precision Switches

A line of precision switches, Series 2HL260, employs a silicone boot that is said to provide a flexible seal between the case and the operating pin, and has a permanent seal between the base and cover of the switch case. The switches are said to give long, reliable service under adverse environmental conditions.



The series is listed by Underwriters' Laboratories, Inc. for single-pole, double-throw operation at two hp 250 volts ac, one hp 125 volts ac, 20 amperes 125 volts ac.

The basic 2HL260 switch is 11/16 inch wide, 1-15/16 inches long, 13/16 inch high, and has two mounting holes on one-inch centers. It can be furnished with solder-lug, screw-type, or snap-on terminals to suit all wiring requirements.

Write Dept. MPM, Unimax Switch Div., The W. L. Maxson Corp., Ives Rd., Wallingford, Conn.

"Moving Bells" Electrostatic Spray Painting Development

An electrostatic spray painting unit, featuring No. 2 Electro-Spray Process bell atomizers, has been developed to automatically paint articles of different sizes. As the size of the articles to be painted changes, automatic sensing devices reposition the bells in and out to maintain correct painting distance. Paint is triggered on and off automatically by a metering valve to accommodate variations in length and spacing of articles on the line. Changes in height of work patterns are likewise handled by turning the bells on and off selectively. Reciprocal motion of the bells is said to produce a uniform, electrostatically-deposited paint coating.

Write Dept. MPM, Ransburg Electro-Coating Corp., Box 23122, Indianapolis 23, Ind.

Hermetic Protectors

Improved motor-compressor overtemperature protection is said to be possible with internally mounted protectors recently developed.

Klixon® Hermetic Protectors, sensitive to both current and temperature, can be internally mounted inside the compressor shell, adjacent to the windings, so as to follow the winding temperature closely and protect to the capacity of the motor.

Several design features are used in the construction of hermetic protectors. The disc contacts must be isolated from the Freon atmosphere where arcing contacts would cause a breakdown in the gas. The terminals come from the hermetically sealed can through glass-to-metal insulating seals and the can is welded to the terminal header by a precision method to insure a leak-free design.

Write Dept. MPM, Texas Instruments Inc., Metals & Controls Div., 34 Forest St., Attleboro, Mass.

Expanded Metal

A line of expanded metals, manufactured from coils and sheets of carbon steel, stainless steel, aluminum, brass, copper and precious metals, has been announced. It is available in a variety of standard gauges, plain or flattened.

In addition to making conventional patterns, which are commercially used for appliances, machine guards, and displays, this company produces a line of "Veri-Fine" mesh as used in missiles and electronics, and samples of this mesh are offered in copper and silver.

The firm states that there is a pattern to suit most needs. If mechanical and decorative specifications are furnished, the company will produce one.

Write Dept. MPM, Niles Expanded Metals Co., 6 N. Pleasant Ave., Niles, Ohio.

Development in Airless Spray Guns

A spray gun for use with airless spray coating systems has been announced. The gun, called "Versa-Gun," features a new internal design that increases turbulence ahead of the nozzle. This is for the purpose of lowering pressure needed for correct atomization.

The spray pattern produced by the Versa-Gun is controlled to produce feathered edges for the proper overlap of gun passes. The Versa-Gun circulates coating materials right up to its nozzle and this feature, plus fast triggering, is said to prevent "splitting."

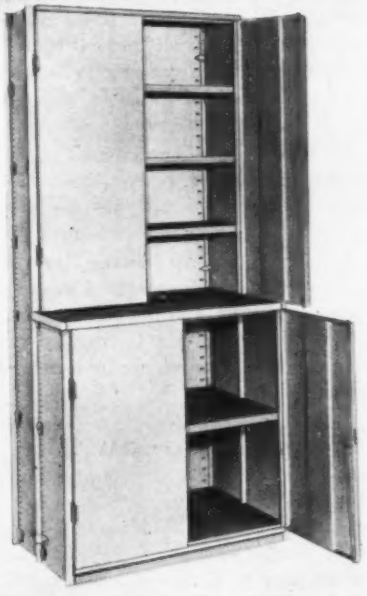
Versa-Gun is smaller and lighter than earlier guns on the market. It is recommended by the manufacturer for any type airless system — heated or unheated. It comes in circulating or "dead-end" models.

Write Dept. MPM, Nordson Corp., Amherst, Ohio.

Closed Ledge-Type Shelving

Closed ledge-type steel shelving with lockable doors has been announced. These 7-T Series units are said to be ideal for safe, secure storage of tools, parts, costly materials and merchandise. A waist-high ledge provides a handy working area.

Units are 36 inches wide and 89 inches high with a ledge depth of 12 inches. Ledge and shelf depths available are 24 and 12 inches, 30 and 18 inches, and 36 and 24 inches. Standard starting sections include seven shelves.



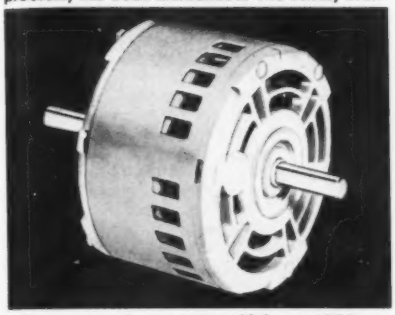
A durable oven-baked enamel electrostatical-

ly sprayed over a special phosphate undercoat protects the units against corrosion. Standard colors are gray and green.

Write Dept. MPM, Penco Div., Alan Wood Steel Co., 200 Brower Ave., Oaks, Pa.

Split Capacitor, Fractional Horsepower Motors

A series of split capacitor, fractional horsepower motors, said to be capable of high efficiency and quiet operation even where heat is a problem, has been announced. The series, avail-



able in ratings from 1/15 to ½ hp at 1050 rpm (115 volt, 60 cycles), can also be wound for 208 or 230 volt operation at 50 or 60 cycles.

Special features include full skew, centrifugally-cast rotors with distributed wound stators; large ½-inch bearings; moisture proof slot and cell insulators; and precision ground and polished shafts. All motors are capable of meeting UL and CSA application tests.

For further information, write Special Projects Editor, Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.

Replacement Control

A replacement control has been added to the 300 series in this firm's complete replacement line, it has been announced. Designed to make on-the-job control replacements faster and easier, the A 11 control adjusts to fit 54 separate control installations. The control mounting bracket is adjustable. Dial shaft extension can be adapted to any required length, and the capillary tube itself is easily shaped with a new forming tool.

Write Dept. MPM, Ranco, Inc., Columbus, Ohio.

Electrically Regulated Control Thermostat

A snap-action bimetal disc thermostat with an internal heater, called Type 29T, is available. The thermostat's internal heater creates its own

temperature or ambient inside the thermostat, and this internal ambient is used to lower the operating point. By remotely controlling the voltage on the internal heater, the unit can be made to operate through a range of temperatures. The internal heater may be furnished between 25 ohms to one meg-ohm.

Write for Bulletin 42 to Dept. MPM, Therm-O-Disc, Inc., Mansfield, Ohio.

Alkendic Anhydride

A liquid anhydride with improved properties in numerous applications, particularly in curing epoxy resins, has been announced. With epoxy resins, Alkendic Anhydride provides long pot lives, ease of mixing, lower density, and very low vapor pressures during cure, thereby reducing material losses. Cured products have high heat distortion temperatures, low shrinkage and good aging characteristics at elevated temperatures, indicating wide utility in electronic component encapsulation and potting.

Write Dept. MPM, Amchem Products, Inc., Ambler, Pa.

Plastic Material

Abson, an acrylonitrile-butadiene-styrene material, is said to have superior flow characteristics for molding and extruding, and to give high gloss, excellent surface finish, and fine detail to finished products.

Production and application knowledge, as well as samples, are available.

Write Dept. RE-1, B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland 15, Ohio.

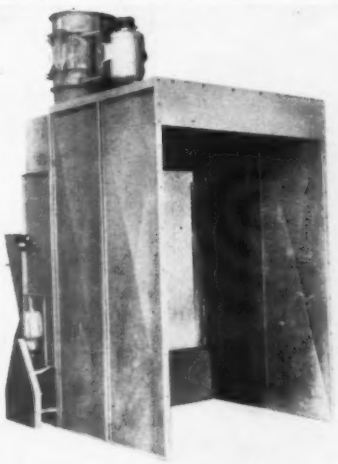
Coder and Printer

This production coder and printer features a solid inking cylinder made of Porelon, a development in self-contained inks. The Porelon plastic roller eliminates the need for fluid inks, solvents, ink fountains and reservoirs, transfer rollers and their maintenance. Each cylinder holds enough ink in suspension for up to 150,000 marking impressions. The plastic roller cannot drip or gum up, and can be cleaned with one swipe of a damp cloth. When exhausted, it can be replaced in less than 15 seconds.

Write Dept. MPM, Thomas Engineering Co., 9257 N. Laramie Ave., Skokie, Ill.

Dry Spray Booth

A dry spray booth that collects paint overspray on a disposable curtain has been developed. Called the "Dispo" booth, it collects paint overspray on a disposable cloth curtain mounted



in the booth where filters are normally installed. The cloth is mounted on rollers so that it can be rotated when the exposed area is saturated with paint particles.

The booth is designed to exhaust approximately 300 cfm of air per square foot of cloth area at a maximum of three inches resistance pressure. As resistance builds up a pressure differential switch operates a motor drive to advance a new section of clean media. When the cloth is fully used up, it is discarded and a new 150-yard roll is installed in its place.

Write Dept. MPM, Binks Mfg. Co., 3114 Carroll Ave., Chicago 12, Ill.

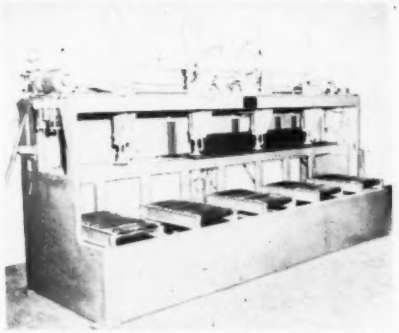
Time-Indexed Tape

Something new in the welding industry, Weld-Record probes production areas never before analyzed. Job and production data is obtained directly from welding machine or device. Results show increased efficiency with substantial savings. Designed to provide data on any job from large or small production work to maintenance and repairs, instruments are equipped with time-printed chart rolls which feed continuously while a ball point stylus draws lines showing at a glance all the "on" and "off" time recorded.

Write Dept. MPM, Weld-Record Corp., 2105 Dawson Rd., Albany, Ga.

Horizontal-to-Vertical Vacuum Feeder

A vacuum feeder designed to lift metal sheets from a stack and feed them vertically to a punch press or other operation has been introduced. The unit is supplied with a ¾-hp

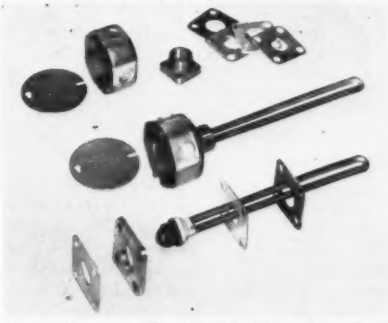


motor, has variable speed drive, and a complete vacuum system with a ⅓-hp vacuum pump. Vacuum cups lift a sheet from a stack and automatic raising arms turn the sheet to a vertical position against powered, magnetic feeder rolls which hold the sheet in vertical position while feeding.

Write Dept. MPM, The Union Tool Corp., Warsaw, Ind.

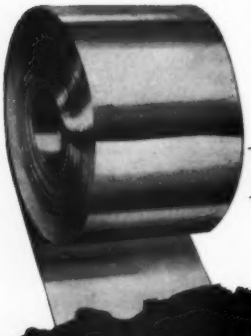
Electric Heating Element

A high density electric heating element for domestic or commercial hot water tanks and low power steam generators has been introduced. Available in wattage outputs of up to 7000 watts, single phase, this corrosion-resistant, copper-sheathed element was designed to lessen maintenance costs by providing a heating density of 150 watts per square inch. This high density is said to "blast" off heavy lime deposits at the start of each heating cycle, and permits use of



shorter elements. The Model 139 replaces both square-flanged and IPS-mounted (iron pipe size) types through the use of adapter hardware which is available from the firm.

Write on your letterhead to Dept. MPM, Thermo-Craft Electric Corp., 429 E. 164th St., New York 56, N. Y., or the Still-Man Mfg. Canada, Ltd., 220 Bay St., Toronto 1, Ontario, Can.



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Nickeloid pre-finished metals are easy to fabricate using standard production procedures.

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Nickeloid pre-finished metals are eminently suited for a wide range of product applications.

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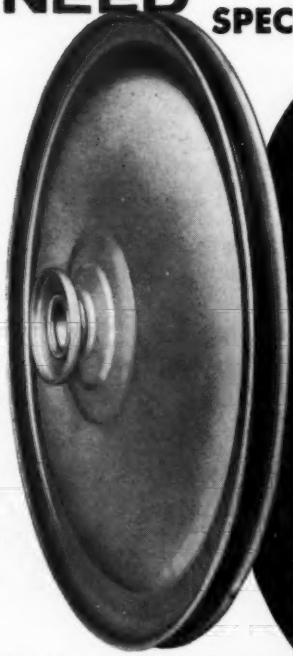

NAGEL-CHASE CAN HELP!

When you need FHP V-Belt Pulleys of special design, you can do better by consulting Nagel-Chase. This company has specialized in FHP pressed steel V-Belt pulleys for more than a quarter century.

The step-down pulley illustrated is a typical example of many especially designed pulleys Nagel-Chase has engineered for use on compressors, washers, dryers, lawn mowers, tractors and agricultural equipment.

Whenever there's a V-Belt Pulley on your new model or product, be sure to consult Nagel-Chase.

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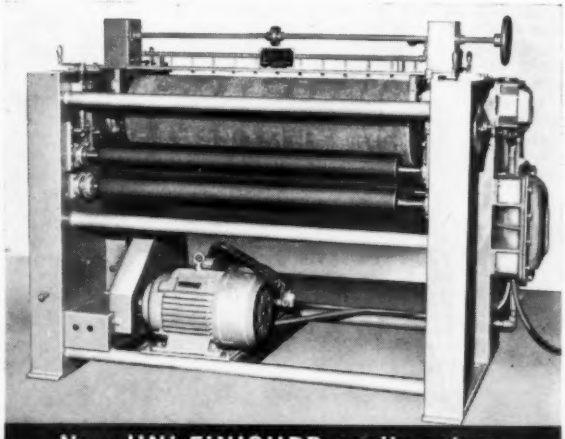
Special low cost step down pulley designed and produced in quantity by Nagel-Chase Stamped metal hub with built-in oil reservoir replaces usual solid metal hub.

The NAGEL-CHASE MFG. CO. 2817 No. Ashland Ave. Chicago 13, Ill.



New UNI-FINISHER easily solves many metal polishing problems

The Uni-Finisher is a ruggedly constructed, precision controlled machine employing the recently developed impregnated nylon abrasive roll, or wheel, destined to play an important part in metal polishing and finishing operations everywhere. Roll types and sizes available, and oscillation variable to meet many needs. Handles sheets 6" to 74" wide at speeds up to 60 lineal ft./min. Write us today . . . perhaps a Uni-Finisher can solve your problem.

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WARSAW, INDIANA

safe transit

editorial voice of the national safe transit program

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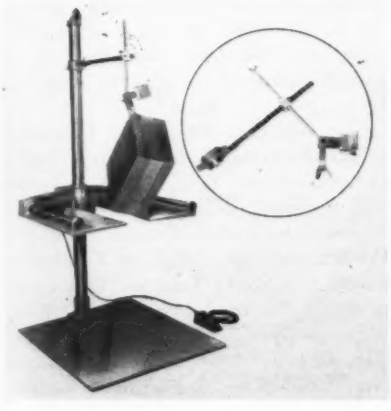
Devoted to improving packaging shipping, and materials handling methods for the appliance and metal products manufacturing industries. This section contains information on plant experience and industry advances for improving packaging and shipping methods, and prevention of in-transit loss. It also contains information on the National Safe Transit Committee's preshipmet testing program and reports on NST activities.

New Attachment for Drop Testers

Gaynes Engineering Co., 1648 W. Fulton St., Chicago 12, Ill., has introduced its new Corner and Edge Drop swivel-type holding attachment which, according to the company, is easily mounted on any make of drop tester. The device puts an end to the troublesome variable of excessive package orientation in laboratory drop testing.



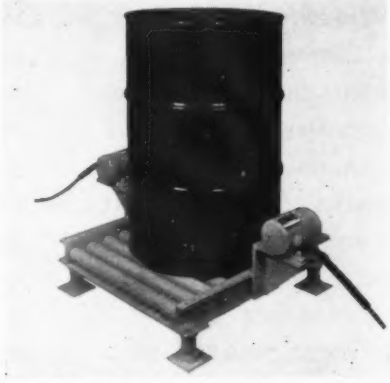
Vibrating Platform Compacts Materials

A line of electric vibrating platforms for packing containers on standard roller conveyors has been announced by the Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland 13, Ohio. Designed for automatic packaging systems, these vibrating platforms may be installed in existing conveyor equipment.

The model illustrated is part of a roller conveyor system in a Texas chemical plant. Two RC-5 electric vibrators compact the contents of 55-gallon drums. The conveyor bed itself is only eight inches from the floor for easy handling of the packed drums.

The unit operates on a rotating eccentric weight principle, and belts and pulleys are eliminated. Impact intensity may be changed by adjusting the position of the weights on the motor shaft.

Additional applications for the vibrating platform include settling powders, packaging dry colors or pigments, fatigue testing, simulating rough handling or shipment jolts, etc.

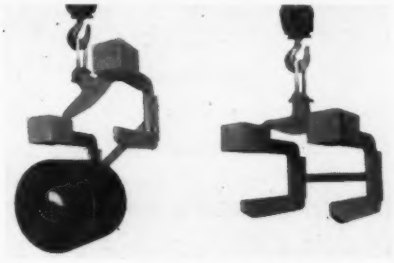


NWBA Meeting Scheduled for Boca Raton, Fla.

The 62nd annual meeting of the National Wooden Box Association is scheduled to be held February 23-24, 1961 at the Boca Raton Hotel and Club, Boca Raton, Fla.

Articulated "C" Hook for Handling Coils

A double-arm articulated "C" hook introduced by Cullen-Friestedt Co., 1300 S. Kilbourn Ave., Chicago 23, Ill., allows a crane operator to give maximum service to a continuous coil line by



picking off two coils at a time, yet permits the operator to handle or set down a single coil to fill all available floor space.

The articulated design of the double hook unit permits the empty arm to elevate out of the way when only one coil is lifted, enabling the crane operator to "spot" a single coil in a narrow space without removing the double-hook from the crane.

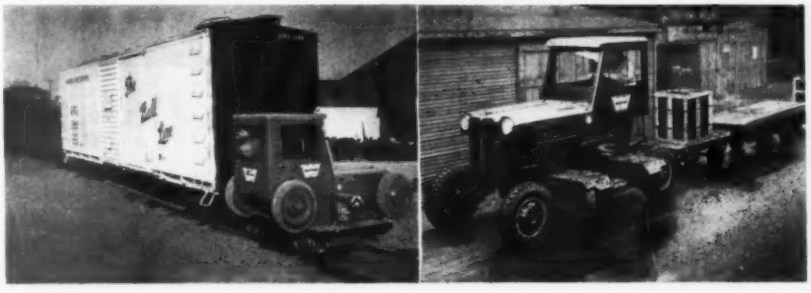
Cullen-Friestedt "C" hooks are available in single, double-arm and multiple-arm types. Other special designs are available on request.

Trackmobile Runs on Rails and Roadway

A vehicle that runs on rails and spots railroad cars, then lowers a set of pneumatic-tired wheels and pulls industrial trucks on roads and docks, has been introduced by the Whiting Corp., Harvey, Ill. The unit also can be used to plow snow off the rails or off the roadway.

To fully describe the unusual and versatile qualities of the vehicle, Whiting Corp. has made available a cartoon book called "Tricky the Trackmobile." It is a book that has a meaning for anyone interested in boosting the efficiency of materials handling in his plant. A copy may be had by writing to Advertising Manager, Whiting Corp., Harvey, Ill.

The Whiting "Trackmobile" as it is used on rails, and as it is used on its road wheels.



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Industry news

→ *from Page 73*

tional manufacturing area of approximately 30,000 sq. ft. Installation of new equipment is expected to be completed by the first quarter of 1961.

Die Casting Award

Nominations are now open for the 1961 Doehler Award which recognizes outstanding contributions to the advancement of the die casting art. The award, consisting of a plaque and cash honorarium of at least $500, is made annually by the American Die Casting Institute. Nominations for the award, along with supporting papers or other related material, should be submitted before April 15, 1961 to: Award Committee, American Die Casting Institute, 366 Madison Ave., New York 17, New York.

Narda Annual Convention

The National Appliance & Radio-TV Dealers Association kicked off its 1961 annual convention with a get-acquainted breakfast on January 13th at the Palmer House, Chicago. The keynote address, "A Look Ahead for the Electronic-Appliance Industry," was presented by Ross Siragusa, Sr., president of Admiral Corporation.

The following three days included technical and panel discussions and talks by such men as: Mason Smith, financial vice president, Whirlpool Corp.; Henry Zwirner, midwest director, Fairchild Publications, Inc.; Richard E. Snyder, NARDA economist; John W. Craig, vice president, Major Appliance Div., Westinghouse Electric Corp.; and Roscoe Rau, executive vice president and secretary, National Retail Furniture Association.

New Corporate Name for Dixie

Dixie Products, Inc. has announced the consolidation of its divisions under the corporate name, Magic Chef, Inc. Dixie Products and Magic Chef have been operating as separate companies under one board of directors since 1958. In the future a single organization will produce and market all appliances under the trade name, Magic Chef.

The top management team consists of S. B. Rymer, Jr., president; Leroy Rymer, chairman of the board; Marvin Rymer, vice president sales; and Robert Rymer, secretary-treasurer.

The new corporation will continue to operate its subsidiaries, Dixie-Narco, Inc., Ransom, W. Va., and Cocinas Dixie de Venezuela, Caracas, Venezuela.

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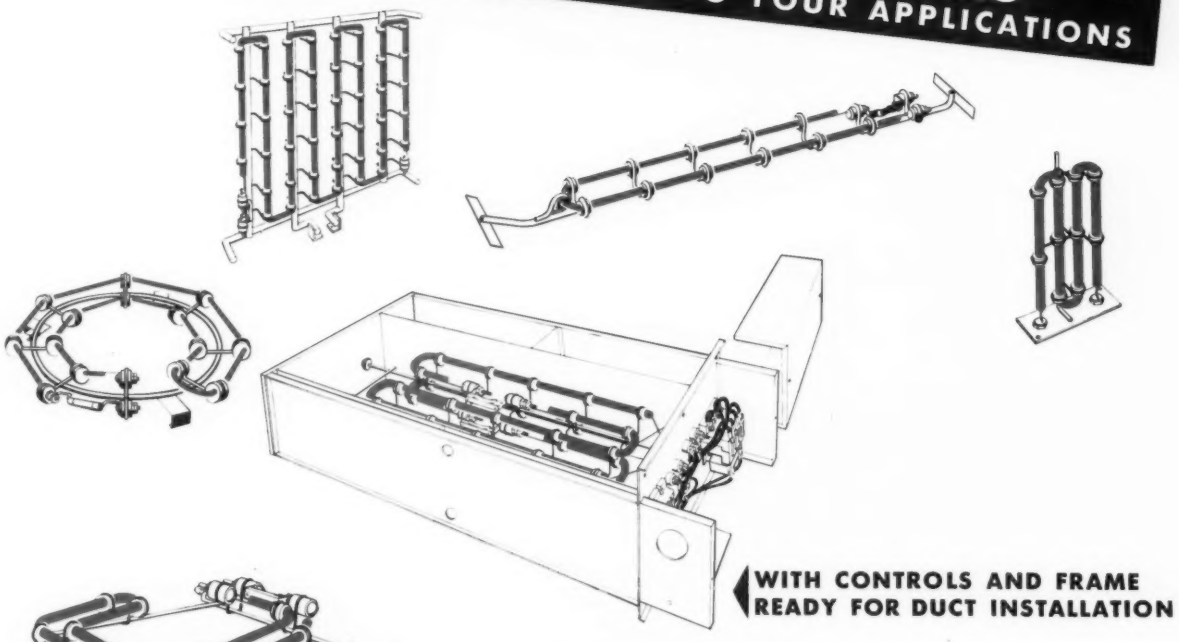

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Stemco Type S Thermostat shown. Other similar bimetal types available in adjustable, non-adjustable, snap-acting, manual reset, probe types, etc.

Stemco Type A Thermostat shown. Other bimetal disc types available in semi-enclosed or potted styles. Ratings, depending on application, to 40 amperes at 240 VAC.

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